TEXTILES PAPER LEATHER

AMERICAN DYESTUFF REPORTER

Including the Proceedings of the
AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

VOLUME XIII DECEMBER 29, 1924 NUMBER 22

THE NEWPORT COLORS

made in the U. S. A.

1925

To our old friends
Appreciation
To our new friends
Welcome
To All
The New Year's Wish
for
Prosperity
and our
Pledge of continued
Service

NEWPORT
REG U.S. PAT OFF
"COAL TO DYESTUFF"

Newport Chemical Works, Inc.
Passaic, New Jersey

BRANCH OFFICES AND WAREHOUSES:
Boston, Mass.; Providence, R. I.; Philadelphia, Pa.; Chicago, Ill.; Greensboro, N. C.

MATHIESON Chemicals

Nineteen-Twenty-Five

INDICATIONS for the coming year point to increased production and greater prosperity in every industry. To be adequately prepared for increased business, you will want to select dependable sources of supply for all your raw materials.

Our large modern plants at Niagara Falls, N. Y., and Saltville, Va., an active traffic department and our own warehouse stocks at forty-two convenient distributing points make up a complete service that insures prompt deliveries to our customers in any quantity.

Why not avoid any uncertainty on your requirements of Alkali and Bleach by specifying the "Eagle Thistle" products?

The **MATHIESON ALKALI WORKS** *Inc.*
25 WEST 43rd STREET NEW YORK CITY

PHILADELPHIA
PROVIDENCE

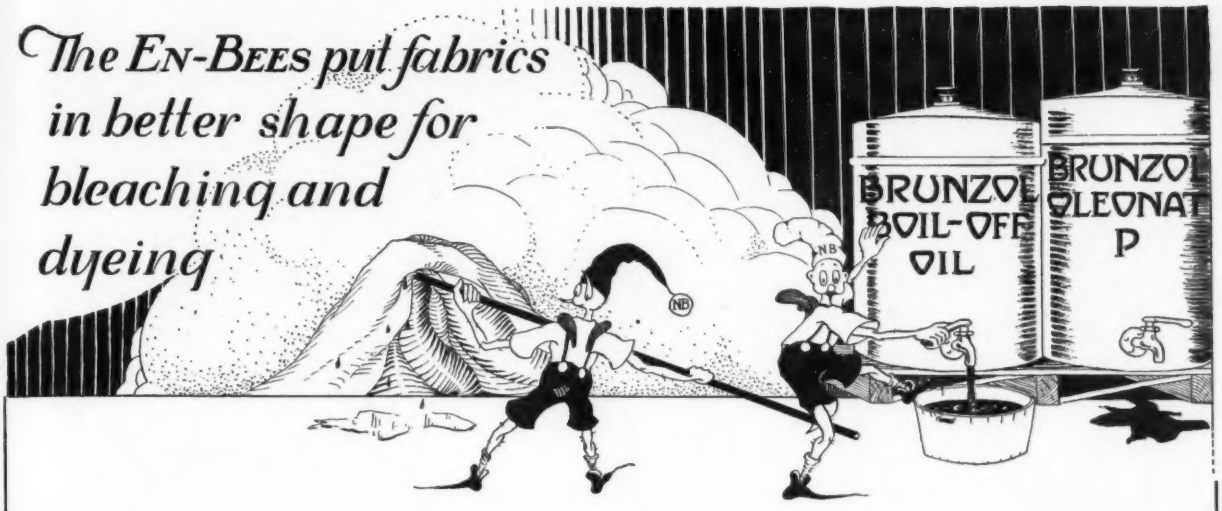
CHICAGO
CHARLOTTE

EAGLE THISTLE PRODUCTS

Deal Direct with the Manufacturer

Bicarbonate of Soda
Liquid Chlorine-Caustic Soda
Sesquicarbonate of Soda
Bleaching Powder-Soda Ash

American Dyestuff Reporter, Vol. XIII, No. 22. Dec. 29, 1924. Published twenty-two times a year by Howes Publishing Co., Inc., 90 William Street, New York, N. Y. Domestic subscription $5.00; Canadian, $5.50; foreign, $6.00. Entered as second-class matter Nov. 6, 1919, at the New York, N. Y., Post Office, under the Act of March 3, 1879. Copyrighted, 1924, by Howes Publishing Co.



How are new and unusual fabric effects secured—the pleasing finishes which roll up a big volume of sales?

Here's the answer—

Brunzol Products!

These Size assistants, Softeners, Waxes, Gums, Waterproofing Compound, put yarns in better shape for bleaching and dyeing—add softness, lustre and depth of shade to the finished goods.

Brunzol Products give salability to your textiles and lower overhead by increasing the volume of demand.

Right now you may have a special finishing problem on your hands. We maintain a laboratory for the working out of textile chemistry problems. Consultation is free and confidential—and invited from every mill.

THE NEW BRUNSWICK CHEMICAL COMPANY
REPRESENTATIVES AT BOSTON - PROVIDENCE - CHATTANOOGA - ATLANTA NEWARK, N.J.

Send for samples of these

BRUNZOL PRODUCTS

Size Assistants
Softeners
Waxes
Soluble Oils
Gum Substitutes
Waterproofing Compound, etc.

The New Brunswick Chemical Co.,
89 Doremus Avenue,
Newark, N. J.

Gentlemen:
Please send me free booklet of Formulae for Improving Finishes of Fabrics with Brunzol Products.

Mr. .....

.....

.....

ANTHROLIC ACID

Reg. U.S. & Can. Pat. Off.

More Level Dyeings Brighter and Faster Shades
At a Lower Dyeing Cost

Chrome Mordants
Soluble Oils
Scouring Compounds
Chemicals for Textile Trade

ARKANSAS CO., Inc.

233 BROADWAY
NEW YORK CITY

S. R. DAVID & COMPANY
INCORPORATED

Dyestuffs

252 Congress Street, Boston, Mass.

Tel. Main 1684

Established 1895

BOSSON & LANE

Manufacturers of

The Original

BLEACHING OIL

for boiling out Cotton, to produce a foundation for a Pure White

High Grade Sulphonated and Saponified

CASTOR OIL PRODUCTS

Para Soap Oil

Solvents and Assistants for cleaning all Textiles

B & L Bleachers' Bluings and Tints

Works and Office, ATLANTIC, MASS.

ALIZARINES
BEAVER
SULPHUR COLORS

NOIL Direct Fast Scarlet B
Direct Fast Scarlet 3B

(Schultz No. 319)

Level dyeing, excellent solubility, discharges to clear whites, excellent fastness to fulling against animal fibers.
Prompt deliveries from Boston warehouse.

New England Representatives

Dunker & Perkins Co.

263 Summer St. Boston, Mass.

AMERICAN
DYEWOOD COMPANY

Dyestuffs for All Trades

COTTON DYEING:	Tetrazo and Tetrazo Fast colors for direct dyeing.
	Tetrazode colors for diazotizing and developing.
	Tetranil colors for direct dyeing with aftertreatment of Metallic Salts for extra fastness to washing and light.
	All Sulphur Colors.
WOOL DYEING:	Acid chrome mordant, top-chromed and tartra-chrome dyestuffs.
SPECIALTIES:	Amazo colors for piece goods—very fast to light—level dyeing—good penetration.
SILK:	Hematine — Fustic — Logwood for Blacks.
	Direct basic and Acid dyes for all shades.
UNIONS:	We specialize in the production of all shades on all mixed fabrics.

We solicit a trial on your goods
Shade cards furnished on request

AMERICAN DYEWOOD COMPANY
NEW YORK · BOSTON · PHILADELPHIA · HAMILTON, ONT.
Works at CHESTER, PA.

Even Dyeing Assured By Diastafor

—Standardized and reliable, Diastafor is the perfect de-sizing agent for the textiler

—Easy to use, it improves the quality of your fabrics and assures absolutely uniform dyeing.

The Fleischmann Company
DIASTAFOR DEPT.
695 Washington Street New York, N. Y.

DIASTAFOR WAREHOUSES:
Boston, Mass. Cincinnati, Ohio New York, N. Y.
Philadelphia, Pa.

DIAX

Bleachers, Finishers and Dyers have complained that de-sizing compounds were expensive and hard to handle.

DIAX, made by the MALT-DIA-STASE CO., brought down the price and made its use easy.

DIAX, because it is better, is being used with great success by the larg-est Bleachers, Finishers, Printers and Dyers

Write us for Free Demonstration and Sample

MALT-DIASTASE COMPANY
79 Wall St., New York City

LABORATORIES
58-64 Garden Street Brooklyn, N. Y.
Wyckoff Avenue and Decatur Street Evergreen, N. Y.

Greater New York Harbor, NEWARK, N. J., Waterfront Plant

OPPOSITE NEW PLANTS OF THE FORD MOTOR CO. AND WESTERN ELECTRIC CO.

BUTTERWORTH-JUDSON PROPERTY

77 ACRES AND SEVERAL HUNDRED THOUSAND SQUARE FEET IN MANUFACTURING BUILDINGS
TO BE OFFERED IN SEPARATE PARCELS OF

5 TO 15 ACRES

Receivers' Absolute Auction

THOMAS G. HAIGHT AND HENRY G. ATHA, RECEIVERS
Including Complete

SULPHURIC ACID PLANT NOW IN OPERATION

Located on Doremus Ave.—Close to Lincoln Highway with large frontage (about 1700 feet) on
PASSAIC RIVER, NEWARK BAY
SIDINGS FROM CENTRAL R. R. OF N. J.

This choice industrial waterfront plant will be offered in 9 SEPARATE PARCELS and then in its entirety on

WEDNESDAY, JANUARY 21, 1925

12 O'Clock Noon on Premises

Rushmore, Bisbee & Stern, Attorneys for Receivers, 61 Broadway, New York City

Send for descriptive booklet describing all buildi gs, their particular use and the acreage included in each parcel.

67 Liberty Street
New York City

Joseph P. Day
Auctioneer / Inc.

Telephone
Cortlandt 0744

Neolan Colors

A new class of Acid Dyestuffs

Equal to the Acid Alizarine Colors in fastness to Light and Fulling.

Particular attention called to

"Neolan Blue GG"

Superior to Alizarine Sapphires, Saphirols, and Cyananthrols in all properties of fastness, especially Level Dyeing, Light and Fulling

Send for Samples and Prices

Sole Representatives in the United States for the **Society of Chemical Industry in Basle** Basle, Switzerland

Ciba Co. Inc.
BOSTON *BRANCHES* PROVIDENCE
PHILADELPHIA COLUMBUS, GA.
GREENSBORO, N.C.
CEDAR and WASHINGTON STS.
NEW YORK
Ciba Co., Ltd., Montreal Canada

Sole Selling Agents for Dow's Indigo and Midland Vat Blues

Sandoz

SANDOZ *ANILINE DYES for ALL TRADES*

XYLENE MILLING COLORS

We carry a full line of Xylene Milling Colors possessing excellent fastness to

Washing
Salt Water and
Light

These colors have found a wide application for dyeing sweater and knitting yarns as well as for shading half wool and half silk fabrics.

SANDOZ CHEMICAL WORKS

INCORPORATED

238-240 Water Street
New York, N. Y.

126 Market Street
Paterson, N. J.

36 Purchase Street
Boston, Mass.

145 Brevard Court
Charlotte, N. C.

813 Hospital Trust Bldg.
Providence, R. I.

12 South Front Street
Philadelphia, Pa.

UNITED CHEMICAL PRODUCTS CORPORATION

IMPORTERS, EXPORTERS AND MANUFACTURERS

YORK AND COLGATE STS., JERSEY CITY, N. J.

Manufacturers of

DIRECT FAST BLACK L

DIRECT FAST BLUE 4 G L

Also Announcing Our New Product

DIRECT FAST BLUE 2 G L

CHARLOTTE, N. C. ——BRANCHES—— PAWTUCKET, R. I.

THE DYER,

Calico Printer, Bleacher and Finisher.

The only Organ of these trades in Great Britain

43rd YEAR OF PUBLICATION

The Dyer has already a large circulation in the United States and throughout the American Continent.

Add the name of your firm to the list.

Published on the 1st and 15th of each month by

HEYWOOD AND COMPANY, Ltd., 150 Holborn, London, E. C. 1

Subscription 12/6 per annum, mail free.

HOWES PUBLISHING CO.,
90 William Street, New York.

.....192...

Please enter my subscription for the American Dyestuff Reporter for one year from date, for which you may bill me $5.00.

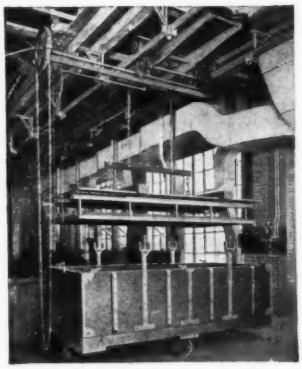
.....

.....

Canadian Postage $5.50: Foreign $6.00.

.....

Dyeing Machine Cage with Detachable Top



Patented.

To load raw cotton, wool, rags, noils or shoddy it is necessary only to dump the stock into the cage, and it is readily distributed evenly thruout the cage.

With this top there is a tight cover for the machine.

Request circular for fuller particulars.

Patentees and Sole Manufacturers

Hussong Dyeing Machine Co.
GROVEVILLE, NEW JERSEY

Electric Underdriven Extractor

For Efficient Work

It has been demonstrated thoroughly in busy plants.

Fletcher Extractors

not only do their work better but also keep operating and repair costs at a minimum.

FLETCHER WORKS

Incorporated
Formerly Schaum & Uhlinger
Glenwood Avenue at Second St. Philadelphia, U. S. A.

TAG-HABUE
TAG
RECORDERS
DIAL-INDICATING THERMOMETERS
CONTROLLERS
OIL-TESTING INSTRUMENTS
An interesting, readable, illustrated bulletin about temperature control in dyeing, scouring, etc., is yours for the asking.
It is the fruit of a quarter-century's research at Temperature Headquarters and in many dye-houses.
"For Every Textile Process There Is One Best Temperature"
Write for your copy of Catalog D-902
C.J. TAGLIABUE MFG.CO.
18 to 88 Thirty Third St., Brooklyn N.Y.
TEMPERATURE ENGINEERS
Insist on Mercury Thermometers with the TAG-Hespe RED Reading Column
SINCE 1769
TAG TAGLIABUE MFG CO N.Y.

KLAUDER-WELDON

Dyeing - Bleaching - Scouring Machinery

There are K-W machines in use which were built nearly half a century ago and which are still doing their work efficiently and economically under severe service. This is sufficient evidence of the durability and capability of K-W Machines after long years of subjection to the ravages of live steam, heat and alkalis.

K-W Machinery by its accomplishments has steadily and irresistibly built up a reputation that has made the name "Klauder-Weldon" synonymous with the **"world's best dyeing, bleaching and finishing machinery."**

Our interest in upholding the K-W reputation means that you MUST be satisfied, and our suggestions to prospective purchasers are made with the view toward solving any dyeing, bleaching or scouring problem for all time. We will be glad to answer any and all questions without obligation on your part whatsoever.

Write today for K-W Literature

The Klauder-Weldon Dyeing Machine Co.

Bethayres, Pa., U. S. A.

H. G. Mayer, Southern Agent,
Johnson Bldg., Charlotte, N. C.

ZINSSER & CO.

Hastings-on-Hudson :: N. Y.

Alizarine

Black, Blue, Browns, Violet and Green

in Paste

for Calico Printers

in Powder

for Wool and Silk Dyers

Write for samples and information

83 GOOD USED TANKS

OPEN AND CLOSED

RECTANGULAR and ROUND

300 to 16,000 Gal. Cap.

PRICED LOW

Sizes and Prices on Request

BUFFALO HOUSEWRECKING AND SALVAGE CO.

BUFFALO, N. Y.

Röhm & Haas Company, Inc.

We have specialized in the manufacture of

Hydrosulfites

and Allied Products

Lykopon—Anhydrous Sodium Hydrosulfite for reducing indigo and vat dyes, for stripping, etc.

Formopon—Sodium Formaldehyde Sulfoxylate for discharge printing.

Indopon W—Indigo Discharge Assistant.

Formopon Extra—Basic Zinc Formaldehyde Sulfoxylate for stripping dyes.

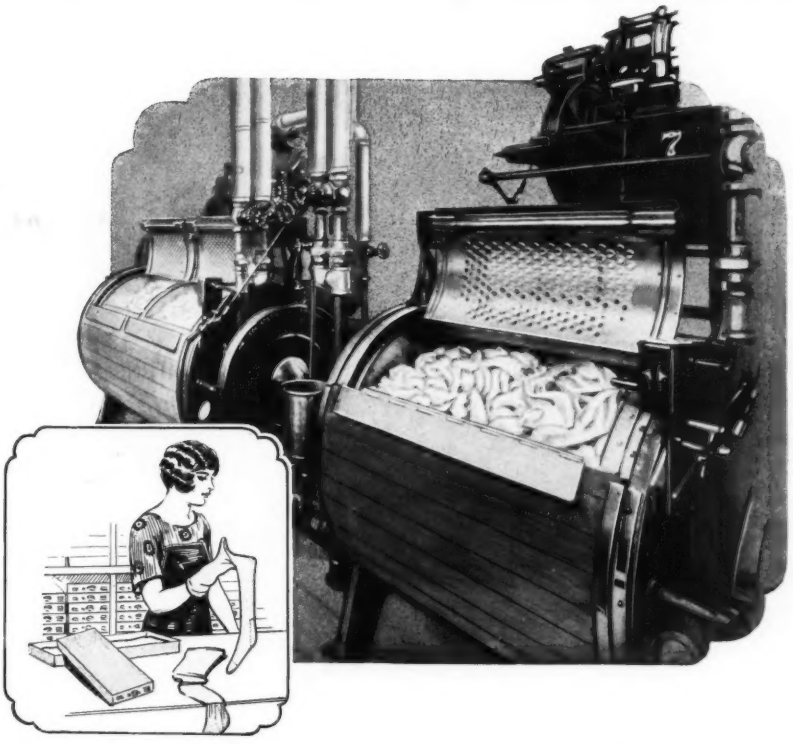
Protolin—Soluble normal Zinc Formaldehyde Sulfoxylate for stripping dyes.

Protolin AZ—A special soluble Sulfoxylate for stripping dyes.

Our laboratory makes a special study of these products and their application, and appreciates the opportunity of co-operating with users in solving any problems which the employment of these products presents. Suggestions for stripping dyes from all classes of goods are supplied on request. We also manufacture in our own plants a wide range of Heavy Chemicals, including Acids, Sodium Sulfide, Glauber's Salt, Aluminum Sulfate, Aluminum Chloride, liquid and crystals, Tartar Emetic, etc.

Office
40 North Front Street
PHILADELPHIA

Factories
Bristol and Bridesburg, Penna.
Branches
Chicago, Ill. Gloversville, N.Y.
Boston, Mass.



Some of the Monel Metal dyeing and bleaching machines at the Colonial Knitting Mills, Philadelphia. Plant completely equipped with Monel Metal machines, made by THE AMERICAN LAUNDRY MACHINERY CO., Specialty Department, CINCINNATI, OHIO.

The "Why" of Colonial Quality

and how it is maintained—ECONOMICALLY

HOSIERY buyers know that the name "Colonial" is assurance of quality in both chiffon and heavy weight hosiery. They also know that Colonial hosiery is always perfectly matched in shade.

This reputation for a perfect product is maintained through the use of Monel Metal dyeing and bleaching equipment.

Monel Metal does not have a "color hang-over." It is so easily cleaned that blue may be used in the morning and orange in the afternoon. It resists corrosion. It won't rust. It is strong as steel. These properties in one metal help make a perfect piece of textile equipment—efficient and economical to the extreme.

Why not find out how Monel Metal can save you money? Write for information today.

New Mill of Colonial Knitting Mills, Inc.
Dye house to left of main building

ASK FOR "LIST B" OF AVAILABLE LITERATURE

THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET NEW YORK CITY

INCo

Monel metal

Those pumps

What are they costing you?

Too bad your pumps can't be hooked up to a cash register. Then you would know how frequent shut-downs, repacking, scored rods, and rod-pitting are building up costs.

Monel Metal pump rods will reduce these costs, for Monel Metal develops a mirror-like, practically frictionless surface that protects packing and operates smoothly. Its immunity to rust, and its corrosion-resisting properties prevent rod-pitting when pumps are shut down, and these same properties prevent deposits in packing which eventually impair both rod and packing.

The economy of Monel Metal pump rods is a proven fact. The U. S. Navy, many large oil refineries, and industrial plants everywhere, have adopted Monel Metal as standard. You will, too, after you have given it a test.

SEND FOR "LIST B" OF AVAILABLE LITERATURE

Write distributor nearest you for details of our special money-back trial offer

Whitehead Metal Products Company,
67 Washington Street North, Boston, Mass.

Whitehead Metal Products Company of New York, Inc.,
261 Canal Street, New York
Branch House: 725 Arch Street, Philadelphia, Pa.
Branch House: 215 Frelinghuysen Ave., Newark, N. J.

Williams & Company, Inc.,
901 Pennsylvania Avenue, Pittsburgh, Pa.

J. M. Tull Rubber & Supply Company,
150 Marietta Street, Atlanta, Ga.

Steel Sales Corporation,
129 South Jefferson Street, Chicago, Ill.
Branch House: 843 Book Bldg., Detroit, Mich.

Edward Schwartz Mill Supply Co., Inc.,
520 Toulouse Street, New Orleans, La.

Eagle Brass Foundry Company,
21 Spokane Street, Seattle, Wash.

Pacific Foundry Company,
Harrison and 18th Streets, San Francisco, Cal.

Robert W. Bartram
129 Duke Street, Montreal, Province Quebec

INCo

THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET, NEW YORK CITY

Monel metal

Contents of This Issue

December 29, 1924

Annual Meeting of the Synthetic Organic Chemical Manufacturers Association.. 843

Proceedings of the American Association of Textile Chemists and Colorists:
Fourth Annual Meeting:
Banquet Session, Saturday evening, December 6, 1924..... 849

Twenty-seventh Council Meeting..... 866

Twenty-fifth Research Committee Meeting 868

November Meeting of the Rhode Island Section 868

Peroxide Bleaching—*A Paper* by Thomas D. Ainslie..... 868

Applicants for Membership..... 871

Changes of Address..... 872

Editorials:

Two Dates and a Retrospection..... 873

The Achievement of the Impossible..... 873

Bruinier Joins Newport..... 874

The Nomenclature of Dyestuffs..... 875
Major R. W. French

Dye Application in China—Part III..... 876
Woo Dong Chi

Dyestuff Tables 880

Correspondence 882

Recent Patents 882

NATIONAL
Solantine Blue 4 GL

A brilliant blue!

On cotton, silk and artificial silk, where excellent fastness to light is required, National Solantine Blue 4 GL yields greenish blues of extreme fastness.

It possesses very good solubility and level dyeing properties and can be applied in all classes of machines.

Test its superior properties on your fabrics.

National Aniline & Chemical Company, Inc.
40 Rector Street, New York, N. Y.

Boston Philadelphia San Francisco
Providence Charlotte Toronto
Hartford Chicago Montreal

NATIONAL DYES
FOR COTTON

A Dyestuff Specialty

Calco Chrome Yellow G

One of the first dyestuffs we produced was Calco Chrome Yellow G, a specialty we developed for the dyeing of wool. Aside from its general use as a self-shade and for combination work, there are two purposes for which it is particularly suited:

1. **MACHINE DYEING**—As Calco Chrome Yellow G is not precipitated from solution by acids, it is recommended for use in all types of pressure machines.
2. **FOR "SILK-WHITE" EFFECTS**—Calco Chrome Yellow G has practically no affinity for silk or cotton. It is, therefore, an excellent color for dyeing piece-goods having silk or cotton thread effects, as these fibres are not stained in the operation.

Principal Features of Calco Chrome Yellow G

Solubility	Excellent
Level Dyeing	Excellent
Penetration	Excellent
Exhaustion	Excellent
Perspiration	Excellent
Washing	Excellent
Water	Excellent
Artificial Light	No change
Sunlight	Very good
Fulling	Very good
Silk and cotton threads are not stained in dyeing.	
Dyeing Method	May be dyed by the after-chrome, chrome bottom and meta chrome methods.

Write us for a sample and quotation on Calco Chrome Yellow G when you are again in the market. You will be surprised to find how economical it is to use

Calco

THE CALCO CHEMICAL COMPANY
Bound Brook N. J.

New York Boston Philadelphia Chicago

Canadian Representative, Dillons, Ltd., Montreal, Toronto

AMERICAN DYESTUFF REPORTER

"Circulated Everywhere Dyestuffs Are Used"

Devoted to the practical application of dyestuffs in all industries; especially to textile chemistry—the science and practice of scouring, bleaching, dyeing and finishing.

VOLUME XIII NEW YORK, DECEMBER 29, 1924 NUMBER 22

Annual Meeting of the Synthetic Organic Chemical Manufacturers' Association

Business Session and Election of Officers—President's Report—Address of F. J. H. Kracke—Address of Francis P. Garvan

ON Friday, December 12, a gathering of collegiate, technical and commercial men—prominent professors of chemistry, dyestuff and chemical manufacturers and dyestuff chemists—convened in the Hotel Commodore to participate in the annual meeting of the Synthetic Organic Chemical Manufacturers' Association.

At the open meeting that followed the morning business session the president of the association, Dr. Charles H. Herty, presented his annual report, which is published below. F. J. H. Kracke, Appraiser of the Port of New York, addressed the meeting with "A Review of Two Years' Experience with the American Valuation Plan." H. C. Meserve spoke of the early beginnings of the National Association of Cotton Manufacturers, of which body he is secretary, and compared this association, in its purposes and in the scope of its functions, to the S. O. C. M. A. He stressed the part such scientific and technical organizations play in the steady progress of the industries which they represent, mentioning the great importance of maintaining a country self-contained as far as necessities were concerned, and dwelling briefly on the place which the American chemical industry takes in our national defense.

At the round-table conference which followed the speakers, and which was attended by leading professors of organic chemistry and technical representatives of the chemical industry, a very interesting discussion of present trade conditions was opened and led by Dr. William J. Hale, of the Dow Chemical Company.

At the executive session the following new honorary members were elected: Henry B. Thompson, of the United States Finishing Company, New York; Frank D. Cheney, of Cheney Brothers, South Manchester, Conn., and Franklin W. Hobbs, of the Arlington Mills, Boston. During the meeting these three gentlemen were called upon for brief addresses, and each in turn arose and praised the good work of the association and eulogized the very notable achievements of our American chemists in industry.

At the morning business session the following officers of the association were elected: President, Charles H. Herty, New York; treasurer, F. P. Summers, Noil Chemical & Color Works, New York; vice-president, August Merz, Heller & Merz Company, Newark, N. J. (Dyestuffs Section); S. W. Wilder, Merrimac Chemical Company, Boston, Mass. (Crudes and Intermediates Section); R. E. Dorland, Dow Chemical Company, New York (Fine Organic and Medicinal Chemicals Section); P. S. Rigney, Roessler & Hasslacher Chemical Company, New York (Special Chemicals Section). Board of Governors: Charles H. Herty, ex-officio, New York City; August Merz, vice-president, Newark, N. J.; S. W. Wilder, vice-president, Boston, Mass.; R. E. Dorland, vice-president, New York City; P. S. Rigney, vice-president, New York City; A. B. Burdick (Fine Organic and Medicinal Chemicals Section), Chicago, Ill.; A. J. Farmer (Dyestuffs Section), New York City; W. F. Harrington (Crudes and Intermediates Section), Wilmington, Del.; E. H. Killheffer (Dyestuffs Section), Passaic, N. J.; A. V. H. Mory (Special Chemicals Sections), New York City; F. P. Summers (Dyestuffs Section), New York City; B. R. Tunison (Fine Organic and Medicinal Chemicals Section), New York City; R. N. Wallach (Crudes and Intermediates Section), New York City; William S. Weeks (Crudes and Intermediates Section), Bound Brook, N. J.; G. H. Whaley (Dyestuffs Section), New York City.

Dr. Herty's report, which follows, aside from its general interest to everyone in the dyestuff industry, brings out some surprising facts that offer indisputable evidence of the rapid advances made by our American dyestuff and chemical industry during 1924, evidence that the momentum gained during the past few years has far from spent itself.

The address by the New York Appraiser, F. J. H. Kracke, consists mainly of a very clear and concise explanation of the difficulties encountered and the complicated technical work necessary in the appraising of the tons of dyestuffs that enter our ports yearly. A very comprehensive outline of the intricate operations of the present tariff act is thus given, and the impression one receives from a reading of Mr. Kracke's description of the methods employed in dyestuff appraisement dispels many of the doubts that have arisen as to the practicability of our present tariff law.

President's Report

By Dr. Charles H. Herty

The general industrial depression of 1924, especially in the textile, paper and leather industries, has of necessity forced a great curtailment in the output of our industry. In spite of this, and to the everlasting credit of the industry, the work of bringing out new products has gone steadily forward, until to-day it can be confidently stated our country has reached economic independence in the field of synthetic organic chemicals.

In contrast to the distressing shortage of the first years of the great war, the present situation can well bring pride and satisfaction to all Americans.

With a capitalization of approximately $150,000,000, the production of synthetic organic chemicals in 1923 was 568 million pounds, with sales amounting to 382 million pounds valued at 165 million dollars. This tonnage, though small in comparison with that of such industries as iron and steel, is made up of a great multiplicity of products—dyes, aromatics, rubber accelerators, synthetic resins, disinfectants, medicinals, photographic chemicals and a host of other products which constitute essential material in practically every industry of our land.

In the field of dyes alone 177 new products have been officially announced to the Appraiser of the Port of New York, and I am happy in recording the fact that of this number 162, or 92 per cent, have come from the firms which make up the active membership of this association.

With increasing experience, gained by hard knocks in the laboratory and plant, the quality of these products has been so constantly improved that upon the willing testimony of consumers I do not hesitate to say that to-day our consumers are getting from American plants the highest quality of products they have ever used. Any merchant who to-day seeks to hide behind the excuse of "American dyes" stamps himself as one who would deceive the public with inferior goods.

But an equally great triumph has been won in the matter of prices of dyes. Without the slightest fear of contradiction I state, upon the basis of official records, that, taking the weighted average of dyes as a whole, American consumers are to-day paying less for dyes than are the consumers in any other country of the world; and, more than that, if the present-day value of the dollar be taken into consideration, American dyes are being sold cheaper to-day in American than were German dyes before the war.

It is a matter of especial satisfaction that in the recent developments in the dye industry there has been placed upon the market a practically complete line of vat dyes. The increasing use of these products in cotton goods manufacture because of their fastness to light and laundering justifies the earlier statement that America is now economically independent in dyes.

But it is not alone in the field of dyes that amazing progress has been made. Few realize the fact that in America there has been created and developed a remarkable industry in the field of synthetic resins. The story of this industry reads like a romance, and it is in every way an American creation, directed by that unique genius Dr. L. H. Baekeland.

In the field of alcohols the United States Industrial Alcohol Company has constantly opened new chapters through its brilliant research staff.

Prior to the war, American research chemists were dependent entirely upon German chemists, but through the patriotic efforts of the Eastman Kodak Company there has now been developed, through the heartiest co-operation in universities and that company, a list of research chemicals which now exceed 1,800, thus again insuring independence.

So, too, in biological stains. Under the scientific guidance of Dr. H. J. Conn there has been developed a line of products which is continuously approaching a complete line of American manufacture.

Along with the extension of lines of manufacture of chemicals there has grown steadily the manufacture of all forms of apparatus, metal, glass, porcelain, earthenware and machinery, which makes available to all laboratories and plants the very highest grades of equipment.

In view of the great strides forward and the constant lowering of domestic prices, the question might well be asked, "Why the need of continuation of protective tariff?" This question can be answered by another question, "Why the need of its removal or its lowering, since domestic consumers are getting through the keenness of domestic manufacturing competition the full benefits of every advance in knowledge and experience gained?" Furthermore, this industry, comprising so great a number of products, must be guarded against selective attack. We know that German prices bear no relation to cost of production but are the result of arbitrary sales policy, and we know that the German Cartel has ample funds available for starting such an attack as soon as the way is open. Evidence of this is already at hand, for immediately after the automatic lowering of the tariff from 60 per cent to 45 per cent ad valorem on September 22 of this year there were entered large quantities

of products competing directly with the vat dyes recently marketed by our manufacturers. Confidence in the outcome of that fight was given by the testimony narrated to me personally by consumers that the quality of the vat dyes offered by American manufacturers is superior to that of the imported dyes; and quality will prove the deciding factor in the long run.

Throughout the past year we have co-operated continuously with the officials of the Government through the admirable services of our counsel and technical adviser. It has been pleasant to receive from Government officials their whole-hearted appreciation of this co-operation. We can boast the proud record of never yet having legally contested the decision of the Appraiser; on the other hand, we have constantly fought for the rights given us under the present tariff act, and again we have a record of 100 per cent success in every case where the fight has had to be made.

It is well that the industry has been on the guard and that it has waged a successful fight, for in the background of it all lies the conviction, oft expressed by high officials of the Administration, by members of Congress in both Senate and House, that this synthetic organic chemical industry constitutes a most valuable reserve for the defense of a nation. Fortunately, we do not have to concern ourselves primarily with that thought, for the essential object of the industry is to prepare blessings for peace. But the industry can be utilized for modern war making and every detail of that industry is now filed with the War Department. And this is well, for I hold in my hands a communication which leaves no doubt that the present visit to Japan of Prof. Fritz Haber, the leader of chemical warfare in Germany during the last war, while ostensibly for the development of a spirit of co-operation in scientific matters between Germany and Japan, is actually for the purpose of endeavoring to arrange closer relationships in the matter of gas warfare. I yield to no one in the desire to see an end of war, but I do not propose to close my eyes or still my voice while such grave matters are being concocted to-day.

In international matters there have been two developments during the past year which bring the utmost satisfaction. First, I have definite information that the whole contract between French and German dye manufacturers has been completely annulled by the French, on the basis that passive resistance in the Ruhr was the real breaking of this contract by Germany. Second, the proposed merger between the British Dyestuffs Corporation and the German Cartel has been vetoed by the British Government. I trust that as the years go by closer bonds of mutual helpfulness will develop between the industries in France, Great Britain and the United States, who once experienced the same difficulties of economic shortage, the same lack of war-time preparedness, and who have trod the same paths in the rapid development of domestic industry in each of our lands.

Public criticism has been made that at the recent London Conference the Allies and the United States were not represented by technical assistance on the question of reparation dyes and pharmaceuticals. Our association declines to take any share of that blame, for I made repeated visits to Washington to convince our State Department of the necessity of having our ambassador and our unofficial representative at the conferences at London and the subsequent conferences aided by qualified technical assistants. My appeals, however, were in vain.

Since our last annual meeting Judge Morris of the Federal Court has rendered a decision in the suit of the Government against the Chemical Foundation, Inc., which bears out fully the confidence we expressed to President Harding and felt throughout the course of the trial. Not only did Judge Morris in his decision declare the sale of the patents perfectly legal in every respect, but he held further and in that decision commended the officers of the Foundation for having "kept the faith," and administered a rebuke to the Government for bringing such a multiplicity of grave charges into court without evidence to support them. The case has been appealed by the Government, and during November the appeal was argued in Philadelphia before the United States Court of Appeals. We await the decision of that court with the same feeling of confidence that possessed us all when it was before the lower court. Necessarily, the great expense of this litigation has prevented the Foundation from doing that full measure of work for education and research that it otherwise could have done; but in spite of this, and through the contribution of his own wealth, Mr. Garvan, the president of the Foundation, has gone steadily ahead in the great work of educating a nation of more than 110,000,000 people on the subject of the intimate relation of chemistry to every phase of life.

In the internal affairs of the association I bring you good report. All financial obligations have been promptly met, our reserve for emergency has been increased and our budget for the coming year has been very materially decreased without sacrificing in the slightest the activities of the association. That there are some in the industry who are content to reap the benefits of the work of the association without contributing either of their counsel or their funds to the support of its work is a matter, of course, of regret. But it has not and will never affect the policies of the association, for from the outset we adopted the principle that this organization would attempt only such work as would benefit the entire American industry and to this principle we hold still. The various meetings held throughout the year have continued to develop a more sympathetic understanding and closer relationships which, however, are entirely within the letter and the spirit of the laws of our land. Throughout the year I have endeavored, through addresses, through interviews and through published articles, to

inform our people of the importance of this industry to the nation, and to awaken them to a sense of pride in the great accomplishments by our chemists and technical men. America has come into its own in this field, but in view of all the great possibilities that lie ahead in the field of synthetic organic chemistry it is a conservative statement to assert the conviction that only a beginning has been made. With a view toward entering most rapidly into this new chapter we will inaugurate a new feature in our meeting this afternoon, a conference between a number of our distinguished professors of organic chemistry and the representatives of our industry. After all, industrial progress depends fundamentally upon progress in scientific research. In this work our universities must take a leading role, and it is to the interests of the industry to aid in the creation of a most favorable atmosphere for such university work. In turn our universities are dependent upon the industries to furnish positions of usefulness for the graduates of our universities. We must all know each other better, learn the problems and the difficulties of each, and in the spirit of that broad understanding of the importance of both the science and the industrial applications of organic chemistry there lies a great field of unending usefulness to our nation and to the world.

A Review of Two Years' Practical Experience with the American Valuation Plan

By F. J. H. Kracke

Looking back over the two years that have elapsed since the passage of the present tariff act and considering the serious handicaps which lack of equipment, personnel and time for preparation imposed on those whose duty it was to administer such a radical departure in the method of appraising merchandise as the American valuation provisions of paragraphs 27 and 28, one must be impressed by the fact that so much of a constructive nature has been accomplished with what some people said or thought was an impracticable way of assessing duty.

In previous tariff acts, as well as in the other paragraphs of this act, the merchandise was or is appraised on the basis of a foreign home market value, export price or cost of production, while under the provisions of paragraphs 27 and 28 of the present act coal-tar products are appraised either on the basis of the American selling price of a similar competitive domestic article or on the United States value of the imported article. In addition, the specific rate on dyes and similar products is assessed in proportion to the strength of the imported dyes compared with standards of strength recommended by us and adopted by the Secretary of the Treasury.

Also, under previous tariff acts only a small personnel and equipment were needed to carry on the coal-tar work, whereas under the new act a considerable staff and equipment are needed.

Consequently, it was necessary as quickly as possible to build and equip a large modern dye-testing room and organize a competent and experienced force to make the comparative dye tests needed for determining the comparability of foreign and domestic dyes and for selecting those dyes which were suitable for standards of strength.

In addition, production reports and samples of all the coal-tar products made in this country had to be obtained, as well as standard samples of pre-war foreign dyes; and all of these samples and information had to be filed and tabulated in a quickly available form.

In a remarkably short space of time this work was accomplished. A total of 4,000 foreign pre-war standard samples and 1,100 domestic samples from forty-five different American manufacturers had been accumulated and a tentative list issued containing the names of 1,300 competitive and 500 non-competitive foreign dyes. This list was compiled from information contained in the production reports of the domestic manufacturers, supplemented by that obtained as a result of conferences held with domestic manufacturers, importers and consumers, and not as a result of actual comparative tests conducted by our laboratory.

During the summer of 1923 the first list of standards, containing 212 standards covering 400 names of foreign dyes, was published as a result of actual tests conducted in our laboratory, supplemented by information from the trade; and in the spring of 1924 a revised and enlarged list of standards containing 470 standards of 1,000 names of dyes, together with a complete index, was published.

Since the issue of these lists of standards and competitive and non-competitive dyes, weekly or biweekly supplementary lists have been issued to keep pace with the importation of new foreign dyes and the manufacture of additional domestic dyes. At present 740 standards of strength covering 1,600 names of foreign dyes have been established by the Secretary of the Treasury; and the list of standards not only forms a legal basis for the assessment of the specific rate, but also furnishes information which affords a reliable check on the values of non-competitive foreign dyes; because all of the names of foreign dyes that are commercially identical with each standard and should have about the same market value (even though made by different manufacturers) are grouped under the same standard.

As a result of tests on actual importations (thereby eliminating dyes which were obsolete, or unprofitable to import, or whose comparability was uncertain in the first competitive and non-competitive lists), accurate lists containing 628 competitive and 871 non-competitive dyes have now been compiled to replace the old lists. Although these figures would tend to indicate that the majority of dyes imported were non-

competitive, and although this is true numerically; as a matter of fact, a review of import figures shows that of the eighty-two dyes which were imported in largest quantity (more than 8,000 pounds each) during the calendar year 1923, and comprised more than two-thirds of the total quantity of dyes imported that year, 63 per cent of the quantity on a poundage basis (or forty-two of the dyes) were of competitive dyestuffs.

The great majority of imported colors are shown by comparative tests to be either clearly competitive or non-competitive, but some instances occur where an imported dye, while being chemically different, appears to produce substantially the same results as a domestic dye when submitted to the various dye and fastness tests (making it apparently competitive), and yet the invoice price of the imported dye is very much higher than the American selling price of the domestic dye. Also, difficulty is encountered sometimes in determining the comparative strength (for purposes of appraisal) of imported dyes with apparently competitive domestic dyes or with other shipments of the same dye owing to different results obtained in light and dark shades, to varying brightness or dullness, or to different exhausting properties and slightly different shades.

In spite of these occasional difficulties, the coal-tar work is now running very smoothly and satisfactorily, and the latest decisions rendered by the board on the key cases selected by the importers for protest have been favorable to the Government.

May I give you my word of appreciation for the valuable assistance we have received from the Synthetic Organic Chemical Manufacturers' Association?

Where there are so many different dyes and so many different importations of the same dye, it would be physically impossible for our laboratory to test every importation, and any outside assistance is always helpful and appreciated, not only in our determinations of whether an imported dye is competitive or not but also as to whether the identity and strength of every shipment are as represented on the invoices.

I would like to ask all the members of the association to please notify us as soon as possible of any change in prices, and also to let us know as soon as any of their products are withdrawn from the market It frequently happens that a test is made by our laboratory which results in our finding that an imported dye is competitive; and when, later on, we ask for the price of the domestic dye, we find that the domestic dye has been withdrawn from the market.

I would like to say in closing that I sincerely hope that the present cordial relations existing between your association and my office will continue.

Address of Francis P. Garvan

The main speaker at the annual luncheon was the Hon. Francis P. Garvan, president of the Chemical Foundation. In his address he pointed out the danger to our dye industry that, in his opinion, lies in the formation of a more powerful and more formidable German dye organization, declaring that German dye manufacturing interests derive their main strength from American financial assistance.

"Already the I. G. has come here under the encouragement of the money-lending proposition," Mr. Garvan stated, "has borrowed millions upon millions of American dollars, and has organized that fund in Wall Street to corrupt and break down the great progress which has been made. Already they dangle their dollars before the weariness of your trial. They seek to buy up this plant and that plant, not with their own money but with American dollars which will be bonded and sold and stuck in the estates of the women and children of this country.

"They won't have a dollar in the plants they seek to buy themselves; they seek to buy those plants to destroy you people by a competition, where they stand to lose nothing but American dollars. Those funds are in Wall Street to-day and reach into the millions of dollars. I call upon you to answer them in the words of the Gospel: 'What come you to see, a reed shaking in the wind?,' or American citizens, who are conscious of the support that this nation has given them, conscious of the support of the consuming industries of the country, conscious of the support that the great people of America in our colleges and schools are giving them.

"A man who listens to their arguments I believe to be a traitor to the people who have helped and supported this industry throughout its burdensome struggle, a traitor to the American flag—every industry of yours which is an arsenal and the introduction of every foreign control over any of the arsenals of America is treason, and it is treason to the great end and cause of all our lives, treason to our children and to our children's children. Because, after all, the aim of this movement is the bettering of the conditions of our children and our children's children.

"I beg of you all to stand firm under the new temptation; I beg of you all to bear your burdens on this new battle, on this new front, and to answer them with a snap of your good American jaw, 'What came you out to see?' . . .

Chemical Industry's Progress

"Dr. Albert said we couldn't create this industry, and I quote from him that 'here in America each party pursued its own selfish interests but nobody kept the whole in mind; that this problem could only be solved through regard for all points of view, and that the conflicting selfish interests of this country rendered their solution impossible.' What came he out to see and what has he lived to see?

"He speaks of it as a whole, and so perhaps I might say to you that right alongside of your own advance

the other parts of that great whole have been progressing also.

"It is an actual fact that in the last five years in this country our universities have completed over $100,000,000 worth of chemical laboratory construction, and it is an actual fact that within the next ten years, if the plans which are formed already go through (and there is no reason to believe they will not) there will be in our universities an equipment of over $500,000,000 worth of chemical laboratories. This is aside entirely from endowments for instruction in those laboratories. And those laboratories are growing closer and closer to industry every day.

"I might almost say that it has become one of the tenets of Wall Street to acquire, in addition to a financial statement, a statement of the scientific plans and work of the industry which hopes to succeed in this after-the-war competition.

"There are 15,000 high schools in this country. Every day finds hundreds of them equipping themselves to teach chemistry in a proper way. Plans have been formed by the American Chemical Society which define the line between the teaching of chemistry in the high school and the teaching of it in the college, and more and more schools are adopting that plan. More and more the high schools are requiring chemistry in their courses.

"To show you the spread of the thing, we found the finest high school in America to be in Wichita, Kans., the most splendid laboratory equipment, the most complete courses perhaps of any school that we have found as yet in America.

"Another interesting thing we found in Rochester, the home of Mr. Eastman, was that the school professor of chemistry in the high school was paid $5,000, which is the mark all the schools should attempt to obtain, because it needs a good $5,000 man to shape the destinies of the boys and girls who want to start upon a career in this most difficult of sciences. And that school, after being two years established, is now paying its entire cost of production through passing on all purchases of the city of Rochester, which pays to the high school the same fee which they before paid to ordinary laboratories, so that the chemical education of that high school is self-supporting and has set itself up as an example for the high schools of all the cities of America.

"Four years ago Mr. Eastman called his men together and told them of the lack of fine chemicals in this country, and told them that they must go to it and see that America was interested along this line.

"In a short time they issued their first catalogue, which contained a list of six intermediates which they were ready to put on the market. Last week their new catalogue contained 1,560 fine chemicals, and 95 per cent of all the chemicals used in their teaching laboratories and industrial laboratories of America are now made in this country of a quality far superior to anything that ever came out of Germany.

"Here was no reed shaking in the wind of industry or American independence. So it is all along the line. Our biological stains, the eleven principal ones, have been standardized, and this winter eight more of them will complete the standardization of all the essential biological stains, and now we have only one or two of those whose minds go back and whose vision is restricted by their position toward the Germans using or insisting upon any biological stains which are imported."

POTENTIAL COAL-TAR RESOURCES

The trail blazed by the manufactured gas industry of America in recovering the essential values in coal promises in a few years to free this country from dependence on foreign sources for fixed nitrogen and other by-products of gas and coke manufacture which are vital for the national defense, according to a report from the New York headquarters of the American Gas Association.

In addition, the sum represented by the saving in coal and the capture of coal tar and other products through carbonization is potentially so great that it cannot even be calculated, it was said. The elimination of the smoke evil by substituting gas for other fuels will not only rid our cities of an intolerable and destructive nuisance but, according to the predictions of gas engineers, will mean turning to useful purposes millions of gallons of creosote, enough to double the length of life of our lumber resources and hundreds of millions of gallons of coal tar which hang to-day like a pall in the form of smoke over the average American industrial community.

Locked up in the nearly 600,000,000 tons of coal produced in this country every year, most of which is wastefully consumed in heating furnaces, are commercial products whose value is comparable to the total wealth of the nation twenty years ago, it was asserted.

Among them are explosives, fertilizers, dyestuffs, drugs, photographic developers, rubber substitutes, paints and varnishes, tanning material, artificial leathers, flavoring extracts, perfumes, disinfectants, printing inks, amber and horn substitutes, wood preservatives, motor fuels, soap, brake linings, linoleum, insulators, building materials and thousands of others.

It is said that at least 20 per cent. of the present water gas output will be superseded by an equivalent coke-oven gas production within the next ten years. The production of this gas, it was said, would be accomplished by a production of about 10,000 tons per year of ammonia nitrogen, useful in the making of mixed fertilizers for agriculture.

The Noil Chemical & Color Works, Inc., have been circularizing the trade with an announcement of Noil Direct Fast Scarlet 3B, for which are claimed good solubility, level dyeing, unusual discharge properties and good heat resistance.

Proceedings of the American Association of Textile Chemists and Colorists

The American Association of Textile Chemists and Colorists

President

LOUIS A. OLNEY
Lowell Textile School, Lowell, Mass.

Vice-Presidents

WILLIAM D. LIVERMORE WILLIAM H. CADY

Secretary

WALTER E. HADLEY
5 Mountain Avenue, Maplewood, N. J.

Treasurer

WINTHROP C. DURFEE
516 Atlantic Avenue, Boston, Mass.

Councilors

ELMER C. BERTOLET
ARTHUR E. HIRST
WILLIAM R. MOORHOUSE
GEORGE A. MORAN
WILLIAM K. ROBBINS
WALTER M. SCOTT

LOCAL SECTIONS AND THEIR OFFICERS

Northern New England Section—
John F. Bannan, Chairman, M. T. Stevens & Sons Co., North Andover, Mass
A. K. Johnson, Secretary, Lowell Textile School, Lowell, Mass.

Rhode Island Section—
Ralph F. Culver, Chairman, Ciba Company, 26 Custom House Street, Providence, R. I
Allison R. Fletcher, Secretary, 34 Waterman Street, Providence, R. I

New York Section—
E. F. L. Lotte, Chairman, National Silk Dyeing Co., Paterson, N. J
Daniel P. Knowland, Secretary, Geigy Co., 89 Barclay Street, New York City.

Philadelphia Section—
Charles S. Hollander, Chairman, Rohm & Haas Company, Philadelphia, Pa
Percival Theel, Secretary, Philadelphia Textile School, Philadelphia, Pa.

Southern Section—
Brown Mahon, Chairman, Judson Mills, Greenville, S. C.
Harry W. Ormand, Secretary, Union Bleachery, Greenville, S. C.

FOURTH ANNUAL MEETING

[EDITOR'S NOTE.—*Owing to the fact that reports of technical discussions held at the morning and afternoon sessions on December 6th have been referred, in many cases, to the authors for correction, and because of the delay on this account, it is impossible to begin the publication of this material until the next issue of the Proceedings, January 12, 1925. The report of the banquet session, being non-technical, did not require such careful editing and is, therefore, published first.*]

Banquet Session, Saturday Evening, December 6, 1924
Bellevue-Stratford Hotel, Philadelphia, Pa.

Toastmaster E. H. Killheffer—As you will notice from the banquet program, Dr. Rose was to have acted as toastmaster this evening. Unfortunately, he was taken ill and couldn't be here, so at the last minute I was pressed into service as a pinch hitter.

There was one item included in to-day's program, entitled "Recent Progress in the American Dye Industry." That subject wasn't covered at all and so as I sat here I thought, "Well, when I get up I will have them absolutely at my mercy so I will try in about an hour and a half to tell them a little of the recent progress in the industry." (Laughter)

Seriously, however, before leaving that subject (I won't keep you long), I want to say just a word on it. In many of the countries of the world I think they have a great deal more pride in many respects than we have in this fair land of ours. I mean that in this way: I don't care where you meet a German, he has a great pride in the chemical industry of his land. I won't carry the illustration any further. That is sufficient. In that same industry in this country, as you have probably often been told and have read, there have been quite marvelous things brought out in the last few years. I sometimes wonder if we are fully alive to it and fully appreciative and nearly as proud as we should be of what has come to be a great industry in this country. Very great progress has been made and great progress has been made during this last year. I won't take your time to try to recite what has been done but I just wanted to leave that thought with you: that your industry here is working hard to be worthy of all the pride that you might have in it, and the prouder you are of it and the more encouragement you lend to it, the better things it will be able to do for you and through you for itself. (Applause)

As I say, I am just a pinch hitter so I am going to pass on rapidly and introduce as best I can the real speakers of the evening.

According to the information with which I have been provided, the gentleman whom I am about to introduce to you is now with the Chamber of Commerce. I understand that Dr. Cattell knows more about Philadelphia than any other living man and that he has made more speeches than anybody in the city of Philadelphia. If just half of what I have heard about him is true, I am sure we can look forward to a treat from Dr. Cattell. (Applause)

. . . Dr. E. J. Cattell, former Statistician of the city of Philadelphia, addressed the banquet in a very humorous entertaining manner. In the course of his address, he eulogized Philadelphia, as a city, and told about some of the things that had been done there. He also touched

on national affairs and called upon the members to exercise patriotism in their every-day lives. . . . (Applause)

Toastmaster Killheffer—We had expected to have with us this evening His Honor, Mayor Kendrick. He has, however, been unavoidably prevented from being present, but has sent in his stead a substitute whom it is my pleasure to introduce at this time, Dr. Thomas W. Davis, the present City Statistician. (Applause)

. . . Dr. Davis welcomed the Convention to the city of Philadelphia, on behalf of Mayor Kendrick, and addressed them at some length on Americanism. . . . (Applause)

Toastmaster Killheffer—This city was referred to a moment ago as "the cradle of liberty." I was thinking as I sat here listening to the addresses we have had thus far that probably it was only partially named; they should also have called it "the cradle of oratory." We certainly have been treated to some of it so far.

We will leave the city of Philadelphia now for a moment and call on the President of our Association, Professor Louis A. Olney, who has only fifty or sixty pages to read to us, and I am sure you will all be very glad to hear what he has to say. (Laughter and applause)

Professor Olney! (Applause)

President Olney—Mr. Toastmaster, Fellow Members of the American Association of Textile Chemists and Colorists, and Invited Guests: To me this meeting in Philadelphia has been a very enjoyable affair, not only on account of the warm hospitality of the Philadelphia Section and the many interesting papers we have heard, but because the city of Philadelphia has for many years held a warm spot in my heart. As I look back thirty years ago to the time when I was a student at Lehigh University, I remember it was always a great event to take a trip down to Philadelphia and watch the University of Pennsylvania and Lehigh play football and baseball; and I never come to this city without pleasant memories of those earlier days.

Some of my fellow members on the Council have a habit of sometimes referring to this organization as my baby. I will admit that I was more or less in evidence at the time of its birth and perhaps wore a father's anxious look, but I think you will agree that it has long since passed beyond the infantile stage and that we can all look upon it to-day and call it our child. It has not, however, by any means reached maturity. There are many avenues along which it was originally planned that have scarcely been opened as yet, and if it had not been for that fact, and that I believe there are some of these that it is my duty to help develop, I should have hesitated about accepting the honor that you bestowed upon me to-day in re-electing me to the presidency for another year.

In the time allotted to me this evening I am more anxious to discuss future plans than to go into detail as to what has already been accomplished by our Association. The two, however, cannot be wholly separated, for the success of the future often depends upon the extent to which we study the past and profit by its experiences and mistakes. Were I to sum up briefly our accomplishments I should say that, first and foremost, we have succeeded in organizing a group of some 800 members who for the most part are deeply interested in the development of their profession of textile chemistry or their practice of textile coloring along scientific and technical lines. Along with this there has naturally come a wonderful opportunity for the development of social and co-operative relations. If we accomplish nothing else, we have brought together a group of members who are scattered from Maine to Georgia, and these members certainly have had a great many of the benefits of this Association, and I dare say to-night there are here several hundred men who are well acquainted with each other who would scarcely have known the others existed if it had not been for our Association. The possibilities of this group, however, are as yet largely potential, and represent a force comparable with that of a large volume of water in a reservoir with the gate but slightly open. The success of the future depends on how much we do to prevent the sand of indifference and the rust of inactivity from clogging the opening.

In this connection let me say just a word about the questionnaires which we send out from time to time. These should be very valuable helps in extending the usefulness of the Association, but their value is, of course, directly proportional to the number returned and the thoughtfulness and care with which they are filled out. The following figures are interesting and convincing. Of about six hundred sent out the last time, only 336 were returned, and in addition to giving name and address 30 answered but one question and only 53 answered two or more of six additional questions. From this data it will be seen that altogether too many are not returning the questionnaires at all, and of those returned many are filled out so incompletely as to be of little assistance.

It is very interesting to look over these questionnaires and get the different ideas as to various matters. A study of the replies also frequently gives us an additional insight into certain phases of human nature. For instance, in reply to the question, "Make any suggestion you may have in mind in regard to the activities of the Association?" one man said, "Let the good work go on," while another said, "Get busy and do something." I will not presume to say which had the best slant on the situation, but merely remark that neither commendation nor condemnation helps very

much unless accompanied with some constructive suggestions; and, as a matter of fact, neither of these gentlemen answered any other of the proposed questions. The fact that they returned the questionnaire, however, is a hopeful sign, and perhaps the next time these same men may give us some real constructive help or tell us how we may speed up a little. If you men would put the same thoughtfulness and care into filling these out as you have to put into your income tax returns (minus the cussing, of course) (laughter), the Council would then have plenty of material to work upon in laying out a program for the Association.

This discussion in regard to our questionnaire naturally leads to a consideration of our Prize Problems, as many of the subjects assigned were suggested through the questionnaires. Either we have picked unattractive or impracticable subjects, or there is a decided lack of interest in these prizes. Of course, there may be an underlying interest which will eventually make itself manifest, but if so all this is dormant up to date, because as yet only one actual competitor has appeared and the committee appointed to consider the merit of his solution finally reported unfavorably. It is hoped that another year will bring forth a longer list of more attractive subjects, together with an awakening of greater activity among the contestants.

Our Year Book has been a subject of much favorable comment, and the first two numbers have been received with so much enthusiasm that it has been decided to continue its publication with, we hope, an ever-increasing value and usefulness. This subject should not be passed without an expression of our *appreciation* to the numerous *advertisers* who have aided materially in making such an expensive undertaking possible. In fact, it would scarcely have been possible to have published this book without their assistance. Our experience of the past two years shows us that approximately *one* page of advertising makes possible *four* pages of text material; or, expressing it in another way, if we can increase our advertising by ten pages another year it will make possible the addition of forty pages of text material.

A year ago the opinion was expressed by a number of our members that more active measures should be taken by the Association with the object in view of greater co-operation with other organizations which might be interested in the numerous problems of dye fastness and standard methods of determining the same.

This suggestion has been put into operation as far as has been practicable, and as the work of our Research Committee progresses we believe that we may be able to extend this spirit of co-operation to a considerable extent.

A study of the possibilities of co-operation, however, soon establishes the fact that there are two quite different lines along which the fastness of dyes may be considered. One is from the *textile manufacturer's point of view* and the other is from the *angle of the consumer's requirements.* In many instances the two may be quite different and fastness tests of vital importance and value to the textile manufacturer may be of no interest whatever as far as the consumer is concerned. One or two illustrations will make this perfectly clear. Take, for instance, fastness to fulling or milling. Lack of fastness in this respect may lead to complete failure to produce the desired effect, and the same might be said of the fastness of dyed material to carbonizing. Both are purely a concern of the manufacturer, and the demands put upon a color in these respects are entirely settled, either satisfactorily or otherwise, long before the goods reach the consumer and even before they leave the mill.

Fastness to light, laundering and perspiration, on the other hand, is of vital interest to the consumer, and unquestionably he has just as much right to be considered in the establishment of these fastness tests as has the manufacturer.

The Research Committee is at the present time actively engaged in an endeavor to correlate as far as possible these two somewhat different demands and, where this does not seem practicable, to devise separate tests for each. It is hoped that by the time the next Year Book appears the fastness tests may be in a sufficiently complete form to cover both requirements. In this work we are co-operating very closely with the Bureau of Standards and much valuable assistance has been rendered by them in various ways. We are also co-operating with the American Engineering Standards Committee and are in close touch with the National Association of Cotton Manufacturers and the National Association of Wool Manufacturers.

A few words in regard to research: You must all know by the persistence and regularity with which I bring to your attention the possibilities of co-operative research that I am not only deeply interested in this subject personally but am more or less determined that our Association shall take a definite and active stand in this matter. In considering this subject two fundamental questions must, of course, be answered: First, What is there for us to do? and, second, How shall we do it? But before I attempt to answer these questions I wish to discuss a few aspects of the promotion of research work as applied to the textile industry in general and the textile coloring industry in particular. From observation over a period of years

and a study of various research organizations, it would appear as though the most successful and valuable research work must be accomplished by individual group units working intensively and more or less independently, and there is no exception to this rule when the textile industry is taken into consideration.

Personally, I believe it would be a grave mistake for *one* central organization representing the textile industry to undertake research work for the whole industry, although I most firmly believe that there should be one central Textile Institute or Foundation representing the whole textile industry for the following purposes: First, to correlate the work of the various units referred to above for the most efficient uses and the best interests of all concerned; second, for the soliciting, assessing if necessary, and collecting of funds to carry on such work; and, third, for intelligently appropriating to the various working units and affiliated organizations such sums as they may show themselves able to use to advantage.

For such a central organization, if backed by the whole industry, the raising of funds should not be such a difficult or unreasonable undertaking, because a little arithmetic will show that as small an amount as $1 out of every $5,000 worth of textile materials sold in this country would yield from $400,000 to $500,000 a year, and even if only 50 per cent of this was collectable there would still be enough to carry on such work with a high degree of success.

The question "Why would it be a mistake for such a central organization primarily to carry out actual research work?" may appropriately be asked. Quite a number of reasons might be given, but three, I believe, will suffice.

First—The opinions, ideas and constructive work of one group of men under the same roof, as it were, can never be as diversified and as productive of results over a broad field as the endeavors and accomplishments of a number of groups working independently but under the general co-ordination, direction and financial support of one distributing organization or foundation.

Second—It would tend to eliminate a competitive spirit of friendly rivalry and comparative pride of accomplishment, owing to the fact that the necessary funds would be forthcoming anyway and not dependent to any great extent upon individual results.

Third—There would be too great a tendency to develop abnormally certain phases of research work to the neglect of others. This would, for the most part, be eliminated and much broader and more representative results obtained through the plan of affiliated units.

Eventually such an organization might profitably have a central laboratory of its own, for undertaking research work not properly covered by its affiliated units, but I believe that this should be a decidedly secondary function and care should always be taken that a proper balance be maintained between this and its primary function.

There are already a number of agencies which would be of great value as units in such an organization, namely, research organizations which already exist or might be established in connection with certain of the leading textile schools, Committee D-13 of the Society for Testing Materials, certain groups of workers at the Bureau of Standards, and perhaps certain private laboratories or individuals who for some reason or another are better fitted to carry on certain phases of the work than any others. It is as one of the co-operating groups of such an organization that I believe the Research Committee of our Association might work most effectively.

Meanwhile, however, there appears to be no such central organization with which to affiliate or from which we can secure funds, and I believe the time has arrived when we must strike out for ourselves. And now for the answers to our two questions.

First, "What is there for us to do?" Among the things which should first engage our attention is the completion of our Standard Methods of testing the fastness of dyes on textile material and the special adaptation of these tests to the requirements of the consumer as well as the manufacturer. This would naturally be followed by the careful testing of individual dyes in accordance with these Standard Methods so that each dye may be definitely located in reference to these various tests, beginning, of course, with the most important and most extensively used dyes. If this work were properly done it would be possible for the manufacturer and dyer, by reference to the data which would be published in regard to the dyes, to tell exactly what each dye would do and what it would not do, and for what purposes it could be safely used and for what other purposes it might be just as well to pass it by. This work in itself would consume considerable time and involve considerable expense in the way of well-trained paid workers, but simultaneously with this there could be carried on certain fundamental studies of the application of dyes with the object in view of modifying and improving some of the processes which we are altogether too much inclined to accept, we do not know just why, as being as satisfactory and as efficient as it is possible for them to be. There are scores of fundamental problems relating to the application of dyes and to the chemistry of dyeing, printing, bleaching and finishing, as well as to the chemistry of the fibers, the solution

of which would be of great value to the textile industry. All of this work is in the legitimate field of the Research Committee of our Association, but without substantial financial backing such work must either be indefinitely postponed or, at the best, proceed so slowly as to be decidedly unsatisfactory and ineffective.

And now the second question: "How shall we do it?" In other words, how may this work be given at least an effective start? To begin with, by increasing the number and the productiveness of our corporation members and by supplementing the money from this source, as time goes on, by an Active Members' Endowment Fund.

While the Council has believed, ever since the organization of the Association, that eventually a call for a large number of corporation members would be necessary in order to properly carry on the work of the Research Committee, it was thought advisable not to emphasize or endeavor to exercise this possibility until our Association should have become well established and have given positive evidence of being a permanent organization. Furthermore, during the past year the textile industry and, consequently, the dyestuff industry as well have been passing through such a depressed period that if we had intended to do so it would have been, psychologically at least, a very poor time to have launched such an undertaking.

The whole situation reminds me of the home missionary that was sent out to North Dakota from a wealthy church here in the East. He had been out there for about a year and finances didn't seem to be forthcoming for his support, so he wrote back to the pastor of the home church telling him of the situation. He received an immediate reply saying, "This is no time to make an appeal. Business has been very poor with the men in our congregation. We are about to make our every-member canvass to collect the funds for next year."

Upon receipt of this letter the missionary wrote back immediately. He said in his letter: "The temperature here is 30 degrees below zero. I am wearing a pair of white cotton outing pants and have a pair of B. V. D.'s in reserve. This is not an appeal; it is a report." (Laughter.)

What I have had to say in the past has not been an appeal; it has been a report. But I think we are reaching the point where, during the next year, you are going to hear something along the line of an appeal.

I would also like to say just a word about the value of our Local Sections. I believe myself that the work of the Local Sections is one of the most valuable and one of the most active parts of our Association, and I think the way in which the Philadelphia Section has entertained us has been a living example of this. We have just formed a Southern Section, which makes five sections in all, and I think that is another sign of progress and development of our Association.

In closing, I wish again to express my sincere thanks for the Association for the kind hospitality that has been extended to us by the Philadelphia Section, and particularly do I wish to thank the Secretary, Dr. Hollander, and his committee (on that committee especially Mr. McIntyre and Professor Bertolet) for all the work they have put into the arrangements for this convention and the royal manner in which we have been entertained here. I am sure that this meeting will go down in the history of the Association as one of the most profitable and one of the most delightful we have ever had.

And finally as to the Active Members' Endowment Fund. As you all must realize, our annual dues of $5 a year in comparison with the dues of similar organizations are ridiculously low. They were purposely placed at this low figure so as not to discourage membership among the younger men in the industry who in many ways might prove to be our most active and desirable members. A large proportion of our members, however, are amply able to pay more than this, and we propose to let them do it, voluntarily, of course, by establishing what may best be known as the Active Members' Research Endowment Fund. It would be my suggestion that only the income from such a fund be spent and in this way there would be built up in time a dependable income of ever-increasing proportions. Of the approximate 600 active members which we have, I have no doubt but what there are a number who will be willing to give $100 or more each year toward such a fund, and nearly every member can give something. I believe such a fund should amount to several thousand dollars at the end of the first year.

There are several things to recommend such a fund. In the first place, it would be wholly an affair of our own, and the satisfaction of seeing it grow would stimulate a decided spirit of support. Furthermore, it would give some of our members who are blessed more generously with funds than they are with time an opportunity to render a positive contribution toward the research work of the Association. On the whole, I think it will be well worth trying and I shall be greatly surprised if it does not prosper. (Applause)

Toastmaster Kilheffer—The country's largest wool merchant and one of Philadelphia's largest manufacturers is also the president of the Philadelphia Textile Manufacturers' Association, and we shall have the pleasure of hearing from him now. Mr. Charles J. Webb! (Applause.)

Mr. Webb—Mr. Chairman, Gentlemen of the Ameri-

can Association of Textile Chemists and Colorists: When your toastmaster refers to "large" or "largest," he refers, of course, to my physical proportions. (Laughter.)

I am here to-night through the kindness of my friend "Billy" Wall and your committee. I don't know what I am here for or what I am here to tell you. I don't know wnether I am here to tell funny stories or whether I am here to talk shop. But as a representative of the largest textile group in Philadelphia, and also the scientific textile group of Philadelphia, I am pleased to note that you have organized, for I am a strong believer and supporter of organization. When we organize into groups it proves an idea that I have always had: the idea of co-operation in competition. The words seem to be contradictory, but if you can accomplish co-operation and be competitors at the same time you do more toward man-building, character-building and eliminating the original sin that mankind seems to have been born with—envy and dissatisfaction with your competitor—than you can do by any other means. I believe that organization will do more toward uplifting mankind than anything else we possibly could do.

I want to congratulate you upon what you did for this nation during the war, when dyes became so scarce that we were using the hulls of walnuts and had gone back to the old wood dyes. You came in and gave us substitutes. I say "substitutes" because at that time they weren't as good as the dyes we were getting from Germany. At any rate, you helped us out. It is true they were expensive. We won't say much about that, because you couldn't have had your organizations if you hadn't had a few good years during the war, and God knows you needed them to put your industry on its feet. (Laughter.) And I, for one, was perfectly willing to help along. It is gratifying to look at your industry to-day and to note the numerous colors you are bringing out and the strides that you have made, and I almost think that you are becoming as efficient in the dye industry as Mr. Cattell said New York was in money matters. I believe that a great future is in front of you.

I also want to take this opportunity to thank you personally, because I have noticed that you have created some sort of chemicals which will take dye off of woolen goods, as well as you can put it on. That has helped me out recently in a financial way, because I was the possessor of four of five million yards of the khaki goods that were made for our soldiers during the war, and lo and behold, I made wonderful civilian goods out of that through the assistance of you chemists. I have also discovered that I can now make women's wear from that material because they have stripped the color out of it and are putting on what they call cranberry color. I suppose you all know what that is. (Laughter.) It is a very bright, striking color, and I want to thank you men for the help you have given me in that direction.

. . . Mr. Webb then gave an interesting and very humorous talk, narrating many incidents associated with textile manufacturing and dyeing which had come under his observation.

Toastmaster Kilheffer—We have with us this evening a representative from the Department of Commerce, in charge of work standardization, Mr. Warren E. Embley. It gives me great pleasure to introduce Mr. Embley. (Applause.)

Mr. Embley—Mr. Toastmaster, Mr. President, Members: I came up here all primed with a good line of stories, but after the competition that I have had thus far this evening I guess I had better cork them up and take them home with me.

Seriously, men, my object in coming here this evening is to see if I can explain to you some of the avenues in which the Department of Commerce may be of assistance to you, some avenues of which you are not already aware.

Your President has told you that you are co-operating with the Bureau of Standards. The Bureau of Standards is one of eight bureaus in the Department, some of the others being the Bureau of Foreign and Domestic Commerce, which touches you all pretty closely; the Census Bureau, the Bureau of Lighthouses and the Steamboat Inspection Service. Some of them you probably do not come into contact with directly, although they are none the less of vital importance to you.

To revert, then, to the Bureau of Standards, with which you have the most direct contact naturally, I can't tell you very much about the way in which the Bureau of Standards can help your particular industry; instead of that, I will tell you some of the experiences we have had in helping other industries in order that you may draw, by analogy, some idea of what we might be able to do for you.

Specifications: The Bureau of Standards' name has been linked up more and more of late with the term "Specifications," and sometimes people don't seem to like them. We find that sometimes manufacturers object to specifications, as they think they are going to interfere with their production problems. Consumers sometimes don't like specifications, thinking that perhaps they are going to increase the cost of their goods.

But I want to present specifications to you in an entirely different light. A specification is not necessarily a matter of sale, a part of a contract. About

ten years ago I had wished on me the job of writing a specification for a lime, an ordinary building lime. Well, the first thing to do in writing a specification is to sit down and figure out what are the properties of the material, the important properties which you are trying to specify.

The first outstanding property of lime is its plasticity, the ease with which it can be worked. That is the one thing that determines the selling price. There was no test for plasticity. Nobody even knew what the word meant. It couldn't be defined in any other way except by what the plasterer told you. So we spent eight years in developing a machine to measure plasticity in order that we might eliminate the human element of the plasterer's judgment.

That machine having been perfected, we had a tool wherewith to work. It was then a rather simple matter to complete the specification for lime, but in the meanwhile something else happened. Gypsum had grown to be a competitor of lime in the plastering industry. Gypsum had the distinct disadvantage that it was not sufficiently plastic, not nearly so plastic as lime. Having this tool with which to work, we could measure the relative plasticities of lime and gypsum; we could find out why gypsum was not plastic, and in about a year we were able to make gypsum just as plastic as lime. That invention was patented and given to the public. It was dealt with in that particular way in order that no one gypsum manufacturer might have the advantage of the invention.

Another thing in connection with the Bureau of Standards organization which might make it of extreme importance to you is the many different fields with which it deals. Any of you who have had the task of taking a laboratory process and putting it into factory production know how many hundred different kinds of unexpected things turn up and how many different kinds of trouble you can get into. At the Bureau of Standards there are experts in almost every line, so that when one of these allied problems comes up unexpectedly in transferring from the laboratory to the factory we always have an expert we can call upon for assistance. When you start to go into factory production you get into things like linings for tanks and power transmission, belting, shafting, new alloys and all that sort of thing.

Another item about specifications which may be of interest to you is the remarkable fact that a specification can be a very good one even though it is never used for sale purposes. If it is a good specification, it is a yardstick whereby the manufacturer can measure the value of his product. We have, for instance, a specification for common brick that has been on the books for about five years, and I don't think it has ever been used in a single contract. The reason for it is a perfectly obvious one: that the test costs more than the brick. Nevertheless, it is a good specification because the brick manufacturers are using that specification for their own information as to the quality of the product. No superintendent of a brick plant can ever put anything over on the "old man" any more, because the "old man" now knows whether the superintendent is telling the truth about the quality of the product or not.

The one particular thought that I want to impress on you to-night is the thought that the co-operation which we hope to see developed and which your President spoke of in his report must necessarily be based upon mutual confidence; confidence in our ability to help you will develop, of course, only after we get much better acquainted. Confidence in our desire to help you, I can vouch for now. With regard to confidence in our business judgment, if I may call it that, we have on many occasions been accused of being high-brows, but we can't lose sight of the dollar mark in any of our work any more than you men in business can lose sight of it. We don't want to pry into your cost and sales figures any more than is done in a very general and helpful way by the Census Bureau and the Bureau of Foreign and Domestic Commerce. We leave the prying to other agencies of the Government who are authorized to do that sort of thing. But in spite of the fact that we don't do anything about costs and don't want to know about them, we can never lose sight of the fact that no process is worth while unless it pays.

Mr. Toastmaster, it wasn't part of my job to-night, but I do feel that I should call the attention of these gentlemen to what I consider to be a rather serious mistake which has crept into this trade, I think this year. Mr. Webb spoke of some color which is known as Cranberry color. I haven't seen any of that Cranberry color on the streets as yet. I have noticed this year that the clothing is almost universally a dull green, a dull rose or a beautiful bronze, and I have made inquiries to find why these dull colors, even though they are beautiful, are used. I discovered that the colors are selected to match the seasons, that in the fall and the winter, when nature is dull and gray, the colors of the clothing are made to correspond; that in the spring, when the flowers are in bloom in profusion, the colors are bright, somewhat like the birds.

You know, the naturalists tell us that the birds are of a brilliant plumage in the spring because they can go around among these many colored blossoms without attracting attention; in the fall and winter, when there are no flowers, the birds change their plumage

and become a dull gray or a dull brown, a system that the naturalists call "protective coloring," in order to promote low visibility.

Mr. Toastmaster, I submit to you that it was a mistake in psychology to think that the 1924 flapper had any need or desire for low visibility or protective coloring. (Laughter.)

I thank you. (Applause.)

Toastmaster Killheffer—The evening wouldn't have been complete without calling on the gentleman who I think should have acted in my place this evening, as he knows you all and is one of you; I believe he is the Secretary of the Philadelphia Textile Manufacturers' Association and we have it from good authority that he is a very good man. I think most everybody knows that. Mr. William J. Wall! (Applause.)

Mr. Wall—Mr. Toastmaster, Fellow Members of the American Association of Textile Chemists and Colorists, and Guests: I don't know why I should have been called upon this evening, because, like Mr. Webb, I came here without a prepared speech and I wouldn't know how to make one even if I had been notified that I would be called upon.

I was the Secretary of the Philadelphia Textile Manufacturers' Association and I have been for many years the Secretary of the Master Dyers' Association of Philadelphia, the only scientific body that remains intact in Philadelphia, the only one that renders real service.

As Mr. Webb said, you made it possible for us to continue during the war period. If it had not been for you chemists there wouldn't have been anybody here to-night representing the dyers. But Mr. Waters is the President of our Association and has been for a great many years. It is quite an active organization, although we haven't as many members as we should have. We are somewhat like this Association; we are traveling along in a little channel and trying to do something to uplift the general dyeing industry. We have done it, there is no question about that. We have about forty-two members out of one hundred and twenty-six dyers. So you see we stand in about the same position that you do as regards membership.

I was very much interested in what Professor Olney said, because, I think, at least in the Master Dyers' Association of Philadelphia, we must certainly make more use of our questionnaires, and we will make more use of the ability that you have which we see very plainly is ours for the asking.

You couldn't have come to a better place to display your intelligence and ability and scientific knowledge, because we certainly need it here in Philadelphia, the largest manufacturing center in all the world in textiles. Philadelphia has $225,000,000 invested in textile production, with a production value of over $550,000,000 and a pay roll of over $112,000,000. We have in Philadelphia alone a trifle more than 90,000 people engaged in the textile industry. When you multiply that by the average family, you can readily see that about 30 per cent of the city of Philadelphia is dependent upon textiles; about 30 per cent of all the inhabitants of this city depend upon the production of textiles for their income.

So it is well that you came to Philadelphia. It is well for us that you came, because we will be benefited by your visit here, and these people who work for us will be benefited because we can and should maintain, for the honor of Philadelphia, this great textile industry. It is the biggest industry, I suppose, in any one city in the world employing that number of persons.

So, gentlemen, as far as the Master Dyers' Association is concerned (and I speak with authority because our President is here), we welcome you to Philadelphia and hope that it will be an annual thing and that the annual banquet will be held in this room, with that wall pushed out so that four times as many people can get in. (Applause.)

Toastmaster Killheffer—I just wish to presume upon you gentlemen for one minute and call upon another local man who has always been a very staunch supporter when we needed support: Mr. Daniel Waters, President of the Master Dyers' Association. (Applause.)

Mr. Walters—Mr. Toastmaster, Members of the American Association of Textile Chemists and Colorists, Gentlemen: It is rather a surprise to be called upon to-night, and very much of a surprise to be asked to speak after listening to the eloquence of the gentlemen who have preceded me to-night. I feel, like my friend Mr. Webb, not being a paid speaker, that the next time I come to an affair like this I am going to get close to the toastmaster in order that I may get the opportunity to speak to you first.

However, gentlemen, it is a great pleasure for me to-night to be present here and to meet so many young men, men who are engaged in a business that is, in my judgment, the most important in the textile line. I feel that I ought to speak to you to-night on a subject relative to chemistry, but I will not do that for good and sufficient reasons. In the first place, if I were to attempt such a subject you would very soon discover that I had not sufficient knowledge to speak to men such as are present here to-night. You men have spent your lives in the business; you are past masters in the art of chemistry. I am connected in a small way with the chemical line, being associated

(*Continued on page* 865)

in a business which is somewhat interested in that subject.

Years ago we did not have the knowledge or the facilities or the material to work with that we have to-day, due entirely to your knowledge; the study which you have made of the subject and the research work which you have done have brought the dyeing industry up to its present high standard. I think I can say without fear of contradiction that to-day the United States stands second to none in the art of dyeing. I will go further and make the prediction that we are now almost a hundred per cent in the production of the dyes that are used in the United States. To be correct, I think we are producing in the neighborhood of 92 per cent of all the dyes used in the United States.

In my opinion, gentlemen, the dye situation has been settled. There was a time when we were floundering. When you stop to consider it, in 1914 there were practically no dye manufacturing industries in the United States; there were what we called "assembling plants"; the material was brought here in the first, second or third stage of process and finished in some of the works in this country.

Ten years ago it would have been impossible to get a gathering of young men engaged in the chemical industry, such as you have here to-night. There would have been no place for them to go to. There was no incentive; there was no encouragement for a young man to spend his time in the study of chemistry. I know, and some others of you know, men who spent their boyhood days, up to manhood, in chemistry, graduates of chemical schools with diplomas; you have met them on the street selling cigars probably, or something else. They had no place to go. To-day it is different. There is an opportunity for young men in the chemical industry, a big opportunity; there is encouragement to work and study and develop, which they are doing. Ten years ago we had very few American dyestuffs here; there weren't *any*, as a matter of fact. When the war broke out, there was a scramble for dyestuffs. My friend Mr. Wall and I made several trips to Washington; when we heard that there was dyestuff here or there, we tried to get it over. It was impossible. Men with capital were willing to go into the industry, but not without some reasonable assurance that there would be protection for that investment.

Capital, gentlemen, you know is like women: it will not go out in the dark. And that was one reason why it was so difficult to get money invested in a business of this kind without some reasonable assurance that the Government would give it protection.

After floundering around for months and months they could get very little encouragement, and the men who were interested in that line took a gambler's chance and went into the business, not knowing whether the war was going to last one year or one month; but they took the chance and invested their money.

Then the great difficulty was to find chemists. The country had very few chemists at that time, analytical chemists. The next thing was to get chemical engineers. One was as scarce as the other. Now, look what has happened! We are now in a position where we do not need to take our hats off to any dye manufacturing nation in the world. (Applause.)

I have been in the dye business for a number of years. I know as much about dyeing as I do about making speeches, and that isn't very much; but nine years ago we had no positive guarantee or any reasonable assurance that we were going to get this or that color; we didn't have the facilities that we have to-day. When a man started to produce a certain shade he would feel his way; he was scared almost out of his wits that he would get the color so dark that he would ruin all the goods and that he would never get the shade he wanted. The experience and knowledge of the chemists has made that problem much easier for us. Now there is very little guesswork about our business.

We dyers also have our laboratories; we can take our material into the laboratory and we can get our formula almost accurate before we proceed to take the five hundred or the two hundred pounds of goods into the kettle. So that when we get our material in shape, scoured and ready for the vat, or whatever it may be, we take our laboratory test and figure out our quantities, and we very seldom go wrong on the shade.

That has all been brought about through you men, and the success of the dye industry will depend greatly upon you men. It is your business. You are the manufacturers, you are the research men; we are simply the consumers, and if you produce the color we will produce the shade. The dyer is more of a shading man. His eye is trained to a color; it is trained to know that it requires a little of this or a little of that or a little of the other thing. You gentemen make the color; we will do the compounding.

Take our vat colors. In one operation they are completed, fast to light, fast to washing, fast to perspiration, fast to all requirements. The article which the Professor read a while ago on the fastness of color interested me very much, especially in connection with what the fastness of color is to be. It is a question as to just what to do when you make colors fast. A color may full; it may stand all requirements; it may

not stand the light when you put it out to the light. As the Professor said to-night, the consumer is going to make us produce colors from which he can expect reasonable service. It makes no difference to the dyer whether the consumer wants a fast color or whether he wants a loose color. We can make whatever he wants if he will pay for it. That is the big question to-day: Will the man pay for the goods that he wants? He wants the best for the least money and he will not give the dyer the proper margin to work on to give him the best that he ought to get.

I remember a few years ago, during those strenuous times in the dyestuff industry, a lady bought a beautiful fur coat right here on Walnut Street. She brought the coat home, wore it for two or three months, and the lining fell out of it. She was heartbroken about the thing; it was a beautiful silk lining. She brought it back to the furrier. He said, "I'm very sorry, but I can't do anything for you. That is American dye, and we can't do any better."

The poor American dyes suffered for many, many things that they had no right to suffer for. I heard about this coat; it was brought to me. I examined it. The lining was a beautiful Irish green; the figure on the silk was made by discharge—zinc-dust or something like that—and where that discharge was, the silk was absolutely rotten. And the American dye was blamed for that. I wrote a letter to this furrier and gave it to the lady to bring to him, and he very politely and nicely put another lining in the coat for nothing.

So that you see what the American dye industry had to go through, with all the propaganda that was being disseminated against it. There were thousands of pounds of German dyes used during the war for lining coffins; they couldn't sell it before the war because it was too inferior and the people wouldn't have it, but after the war broke out it was used very extensively for lining caskets.

In conclusion, I feel very much encouraged as to the success of American dye institutions from now on. I feel that it is entirely up to the consumer to support and encourage the American dye industry by using colors that are made here, all things being equal, rather than using foreign dyes, no matter where they are made. I think we owe that much to the manufacturers. (Applause.) I think we ought to use our domestic products, all things being equal, rather than go outside for foreign colors, just as much as we ought to use domestic hosiery, domestic dress goods, domestic men's wear, or anything else. We owe that to the people who have spent their money to go into the business, who have given employment to hundreds of thousands of people, to young men who have never had an opportunity before to become men of importance, men of good caliber, and who have acquired through them a knowledge of chemistry, so that if ever (and I pray God this will never be) we have another war we will be in position to handle it, to take care of ourselves and fight the battle to a finish.

Thank you! (Applause.)

Toastmaster Killheffer—We stand adjourned, gentlemen.

TWENTY-SEVENTH COUNCIL MEETING

The Twenty-seventh Council meeting of the American Association of Textile Chemists and Colorists was held at the Bellevue-Stratford Hotel, Philadelphia, Pa., Friday afternoon, December 5, 1924.

The following members were in attendance: L. A. Olney, W. D. Livermore, W. H. Cady, W. C. Durfee, W. K. Robbins, W. M. Scott, C. S. Hollander, G. A. Moran, W. R. Moorhouse, E. C. Bertolet, Edw. F. L. Lotte and W. E. Hadley.

W. C. Durfee, Treasurer of the Association, reported that there were a great many members who were delinquent in the matter of payment of dues for 1924, and it was voted that treasurers of the Local Sections, as far as possible, get in touch with such members in an effort to clear up such a condition for the year 1924.

At the suggestion of Dr. C. S. Hollander, it was voted to have at least two Council meetings each year, held in New York or Philadelphia, in order that those members of the Council who live a considerable distance from Boston could find it convenient to be in attendance.

Dr. Killheffer, chairman of the committee which had charge of the formation of the Southern Local Section, reported that such a section had been duly organized during the week of the recent Textile Exposition held in Greenville, S. C., and that the new Local Section will include that territory south of Washington.

The following members were admitted to membership:

Active Members

Arrington, Richard W., superintendent Union Bleachery, Box 598, Greenville, S. C.

Dunn, C. L., manager Re-Worked Wool Company, 115 Market Street, Chattanooga, Tenn.

Dougan, John E., silk dyer, Cheney Bros. Company, Inc., 18 Pearl Street, South Manchester, Conn.

Dougan, Paul R., dyer, Cheney Bros. Company, Inc., Box 835, South Manchester, Conn.

Frick, G. E., superintendent of dyeing and finishing, Yates Bleachery, Flintstone, Ga.; 4215 Alabama Street, Elmo, Tenn.

Hartsuch, Prof. B. E., associate professor in chemistry in charge of textile chemistry, Michigan Agricultural College, 422 West Michigan Avenue, East Lansing, Mich.

Hayes, Samuel L., superintendent Bronx Company, Inc., 177th Street and Bronx River, New York, N. Y.

Howard, Frank E., division superintendent, Pacific Mills, Wellford, S. C.

Hunter, John D., Southern representative, H. A. Metz & Co., Inc., 301½ West Trade Street, Charlotte, N. C.

Jorgensen, Axel. J., superintending chemist, Bibb Manufacturing Company, Box 542, Macon, Ga.

Koppe, William, dye technologist, Appraiser's Stores, New York, N. Y.; 5551 Hudson Boulevard, North Bergen, N. J.

Lascari, Sol. Chas., boss dyer, Weiss, Wilhelm Company, Inc., Passaic, N. J.; Box 5, Lodi, N. J.

Lavoie, Philip, superintendent of finishing, Mount Hope Finishing Company, Box 181, North Dighton, Mass.

Mahon, Brown, vice-president and assistant treasurer, Judson Mills, Box 1009, Greenville, S. C.

Mackenzie, Malcolm, superintendent bleaching, dyeing and finishing, Cramerton Mills, Box 133, Cramerton, N. C.

McMann, Walter C., superintendent bleaching and finishing, Riverside and Dan River Cotton Mills, Danville, Va.; Box 246, Schoolfield, Va.

Milliken, Joseph P., chemist, Bellman Brook Bleachery, Fairview, N. J.; 104 Burton Avenue, Hasbrouck Heights, N. J.

Moore, J. E., dyestuff salesman and demonstrator, Grasselli Dyestuff Company, Box 79, Charlotte, N. C.

Moore, R. M., chemist, Penn Worsted Company, York and Jasper Streets, Philadelphia, Pa.

Mungall, A. W., dyer, Massachusetts Cotton Mills, Box 275, Lindale, Ga.

Mungall, T., dyer and bleacher, Pell City Mills, Box 84, Pell City, Ala.

Mungall, T. G., overseer of dyeing, Killy Cotton Mills, Montgomery, Ala.

Oesterreich, Irvin E., dyer, United Hosiery Mills Corporation, North Dodds Avenue, Chattanooga, Tenn.

Portner, Edward J., salesman and demonstrator, the Carbic Color & Chemical Company, New York, N. Y.; 54 Reservoir Avenue, Jersey City, N. J.

Rodgers, H. A., salesman, National Aniline & Chemical Company, 910 James Building, Chattanooga, Tenn.

Rollins, Henry E., colorist, Grasselli Dyestuff Corporation, New York, N. Y.

Ruck, H. F., chemist, Chemical Company of America, New York, N. Y.; 142 Kent Street, Brooklyn, N. Y.

Steiner, George, boss dyer, Princeton Worsted Mills, Inc., 102 Parkway Avenue, Princeton, N. J.

Stewart, William A., yarn dyer, John Campbell & Co., 406 June Street, Fall River, Mass.

Stott, Philip H., chemist, Newport Chemical Works, Inc., Passaic, N. J.

St. John, Sylvester, bleacher, Rockland Finishing Company, 2 Garner Terrace, Garnerville, N. Y.

Sweet, E. W., salesman and demonstrator, Grasselli Dyestuff Corporation, Box 247, Burlington, N. C.

Taylor, Tom, demonstrator, Newport Chemical Works, Newnan, Ga.

Temple, Charles A., manager, Essex Aniline Works, South Middleton, Mass.

Tillson, Henry E., salesman and demonstrator, 6056 Chester Avenue, Philadelphia, Pa.

Torpey, Henry K. W., dyehouse second hand, Massachusetts Cotton Mills, 87 Crawford Street, Lowell, Mass.

Wallace, George G., chemist, Ciba Company, Box 163, Columbus, Ga.

White, Noel D., dyer, Davenport Hosiery Mills, Chattanooga, Tenn.

White, Thomas Edgar, boss dyer, Brogan Mills, 2 X Street, Anderson, S. C.

Junior Members

Barker, W. L., chemist, Riverside and Dan River Cotton Mills, Danville, Va.; Box 314, Schoolfield, Va.

Cobin, Arthur E., manager National Hosiery Dyeing & Finishing Works, 54 Thayer Street, Boston, Mass.

Durgin, William E., student, Lowell Textile School, Lowell, Mass.; 154 Dudley Avenue, Roslindale, Mass.

Heslin, Bernard A., dyer, Lowell Beachery, 74 Westford Street, Lowell, Mass.

Leftwich, Ernest H., second hand in dyehouse, Union Bleachery, Greenville, S. C.

Shirley, Archie P., second hand, Southern Worsted Corporation, Greenville, S. C.

Sulger, Dr. August, chemist, Eddystone Manufacturing Company, Eddystone, Pa.; 6 Bartel Avenue, Ridley Park, Pa.

Watt, James A., dyer, Louden, Tenn.

Wood, R. C., color matcher, John Campbell Company, New York, N. Y.; 322 Brehaut Avenue, Tottenville, Staten Island, N. Y.

Wright, E. P., Pacific Mills, Wellford, S. C.

Zwaan, John C., chemist, United Piece Dye Works, 39 Park Street, Lodi, N. J.

W. E. HADLEY, Secretary.

TWENTY-FIFTH RESEARCH COMMITTEE MEETING

The twenty-fifth meeting of the Research Committee of the American Association of Textile Chemists and Colorists was held at the Bellevue-Stratford Hotel, Philadelphia, Pa., Friday afternoon, December 5, 1924.

The following members were in attendance: L. A. Olney, W. D. Livermore, W. H. Cady, W. C. Durfee, W. K. Robbins, W. M. Scott, C. S. Hollander, G. A. Moran, W. R. Moorhouse, E. C. Bertolet, Edw. F. L. Lotte, W. A. Appel, P. J. Wood, E. H. Killheffer, H. Christison, H. W. Leitch and W. E. Hadley.

Considerable time was spent in discussing what the future work of the Research Committee would consist of.

It was the consensus of opinion that an endeavor should be made to correlate the different fastness tests which have been devised up to the present time in such a manner that they will be applicable to the consumer as well as to the manufacturer.

Mr. Appel has done considerable work in testing the present methods and the members of the various subcommittees have co-operated with him in his work, furnishing him, in many instances, the necessary samples of dyed and printed fabrics.

W. E. Hadley, Secretary.

NOVEMBER MEETING OF THE RHODE ISLAND SECTION

The November meeting of the Rhode Island Section of the American Association of Textile Chemists and Colorists was held November 18, 1924, at the rooms of the Providence Engineering Society, 44 Washington Street, Providence, R. I.,

R. F. Culver, Chairman, called the meeting to order at 8.15 p.m. and introduced the speaker for the evening, Thomas D. Ainslie, Superintendent of Bleaching Station, the Roessler & Hasslacher Chemical Company, Perth Amboy, N. J., whose subject was "Peroxide Bleaching."

Mr. Ainslie, a recognized authority on bleaching, gave an address of considerable interest and instructiveness The lively interest of the members present was manifest by a bombardment of questions lasting over an hour. Mr. Ainslie's paper is published in full herewith.

A rising vote of thanks and appreciation was given by the fifty-five members present.

Respectfully,

Allison R. Fletcher, Secretary.

PEROXIDE BLEACHING

By Thomas D. Ainslie

Superintendent of Bleaching Station, Roessler & Hasslacher Chemical Company

The term "peroxide bleaching" usually covers processes carried out with bleach liquors made up from either hydrogen peroxide or sodium peroxide. The latter is sold by the Roessler & Hasslacher Chemical Company under the trade name of "Solozone." Solozone is the cheapest source of hydrogen peroxide available. For this reason it is used throughout the trade for bleaching purposes. Solozone is a yellowish gray powder which dissolves readily in water and reacts in the presence of sulphuric acid to form Glauber salt and hydrogen peroxide. Sodium peroxide is the most economical agent for bleaching textiles where it is desired to use a peroxide treatment. It has many advantages as, for instance, it may be stored indefinitely without deterioration; occupies but a small space when stored, and has low carriage charges, since it is a highly concentrated chemical. Many dyers and chemists were prejudiced against Solozone owing to their belief that it was a dangerous chemical to have about the plant. We have found, however, in our experience that these fears were groundless and that a bleachery could employ this peroxide without courting trouble for themselves by using the same precaution that they do with other similar chemicals. It has taken a while to convince some of the truth of these assertions, but to-day Solozone is used in practically all lines of the industry successfully. It is very rare, indeed, that we receive a complaint that can be traced directly to the Solozone in any way, shape or form.

Hydrogen peroxide is furnished in various strengths which are usually given in terms of volume. Our own hydrogen peroxide is 25 volume strength and is sold under the trade name of "Albone" and is too well known to require further comment.

There is one remaining source of hydrogen peroxide occasionally met with and that is perborate of soda. Solozone will do anything, generally speaking, that perborate of soda will do at a less cost; therefore, it is generally a case of economy in using Solozone rather than perborate. There are instances, however, where perborate may be used to advantage and it is really a wonderful product. Perborate eliminates the necessity of neutralizing with acid; it is easily stored and under certain conditions, as I have said above, may be used to advantage.

At this point it may be well to state just what the word "volume" means in terms of hydrogen peroxide since only recently we had a case where a bleacher claimed to us that he was bleaching in a 10-volume bath and that his results were unsatisfactory. An investigation developed the fact that this man's bath tested only 1 1-3 volume. Therefore, it is important to see that the man in

charge of the making-up of the baths understands just what the word "volume" means so that in case instructions are passed to him dealing with volumetric strength, he will understand them. A one-volume solution means that one gallon of bleach liquor will liberate one gallon of gas; two volumes, one gallon of liquor will liberate two gallons of gas, etc. A simple way to find the volumetric strength of a Solozone bleach bath is to divide the pounds of Solozone contained in each 100 gallons of water by six. As an example, if a bleach bath contained twelve pounds of Solozone to each 100 gallons of water, twelve divided by six would give two, or in other words, it would be a bath of two-volume strength. If the bath is made up of Albone, which is, as explained above, 25-volume hydrogen peroxide, dividing the gallons of Albone contained in each 100 gallons of bleach liquor by four will give the strength of the bleach bath in terms of volume.

A hydrogen peroxide bleach bath in practically all cases is alkalined with some suitable chemical. The strength of the bath is based primarily upon the goods being bleached and the equipment as I shall explain farther on. It is always advisable in making up a bleach bath to test its strength immediately after its preparation and again at the completion of the bleaching so as to be sure that no great quantity of available oxygen is lost in mixing or is being run into the drain pipe after bleaching. The test is exceedingly simple to make and requires but a moment or two to carry out, and for this reason we especially urge a careful testing of the baths. If, for instance, Solozone is stirred into the solvent liquor too rapidly, a considerable loss of oxygen may occur or if the water is too warm an equally large loss may be noted. In the former case it is due to building up a high alkalinity in localized spots, which causes decomposition almost as soon as the hydrogen peroxide is formed, and in the latter case the heat of the bleach liquor plus the heat developed by the sodium peroxide going into solution causes overheating which will also break the hydrogen peroxide down.

It is not desirable, where sodium peroxide is used, to make up too strong a bath. A two-volume bath is approximately the limit prepared for textiles. Bleach baths for all ordinary purposes usually test one-volume or less. However, it is often desirable or, in fact, necessary to make a more concentrated bath to save time or to permit the use of certain equipment.

In a kier bleach, the bath is sometimes made up strong and then water added to dilute the liquor after it is in the kier. While this is all right, we prefer to do the diluting in the drain pipe leading from the mixing tank to the bleaching equipment. This has many advantages. One of them, for instance, is that the bleach liquor is uniform throughout the mass of material, except possibly the first foot or so which comes up through the cloth, which will wash out the water contained in the goods and thus dilute itself considerably. Another thing, mixing in the drain pipe permits the use of two tanks. One may contain water at a boil and the other comparative cold bleach liquor. If these two tanks are approximately the same size with similar outlets leading into a common delivery pipe, the two will drain simultaneously and deliver a bleach bath very close to the desired temperature at which it is to be used. This means that the goods will be uniformly heated and that the bath will be at the correct temperature while it is at its greatest strength. This reduces the bleaching period, assures penetration and reduces the loss of oxygen through heating.

When a liquid peroxide is used the bath is generally prepared with Albone and sodium silicate. The sodium silicate employed is usually 42 deg. Be., water white. It should have a minimum iron content and if it comes from an iron drum it should be filtered to avoid the possibility of specks of iron rust going into the bleaching container. Where Solozone is employed, a good grade of commercial sulphuric acid, 66 deg. Be., strength, is used to neutralize the caustic soda formed in the reaction between Solozone and water. This sulphuric acid should be of a minimum iron content; otherwise trouble may be met with either through the fibers absorbing the iron compounds or a rapid decomposition of the bath. After mixing the acid and the Solozone together, the silicate is added. This acts as an alkalining agent and at the same time induces decomposition at a rate which is satisfactory for practically all bleaching purposes. An experienced operator can prepare a bath with sodium peroxide in a comparatively short time.

It might be well at this point to say a few words about catalysts. The various substances classified under this heading are those which cause the hydrogen peroxide to break down rapidly in the bleach bath. Now we all know and appreciate that it is the atomic oxygen which does the bleaching, and that if oxygen is released too rapidly many of the atoms, instead of combining with or attacking the colored impurities in the cotton, will unite to form molecules which, of course, have no bleaching power and thus only a portion of the available oxygen will be useful. Now, if a catalyst occurs in one particular spot, such as a copper nail wrapped up in cloth, this nail will decompose the hydrogen peroxide in its immediate vicinity only and the steady evolution of the gas in one particular location will serve to overbleach the fibers immediately adjacent to it. This, however, does not mean that an iron kier cannot be employed for bleaching. This is accomplished by isolating the metal with a coating of some suitable material such as lime, cement, silicate, etc., or a mixture thereof and also by the fact that with continued use, the iron will become more or less inert. New equipment is always more troublesome this way than old. Copper should not be employed in conjunction with hydrogen

peroxide because, in the first place, there is danger of copper salts being taken into solution to be absorbed by the fibers, and, in the second place, it has a strong tendency to break the bond between the oxygen and water, thereby accelerating the decomposition. In planning apparatus or in laying out work, the equipment should be given most careful consideration from the standpoint of the metal employed in its construction.

Bleaching kettles are usually equipped with a closed lead steam coil. I say closed because direct heating contaminates the bath with oil or iron rust and always causes excessive dilution, gives varying results and is anything but satisfactory. Chemical lead pipe of the double A grade is most generally used for a heating coil. The equipment itself may be a concrete or cypress kettle, an iron kier, Monel metal rotary machine or a reel machine. I cannot go into detail, of course, in this short time. In fact, there is enough to be said about this one item to occupy an evening. It is advisable, for instance, to have all iron tie-rods in the wooden machine encased in lead, as otherwise when the hydrogen peroxide soaks through the wood and comes in contact with these rods, it will be split up and this constant breaking down of the hydrogen peroxide in the immediate vicinity will cause rapid disintegration of the tank. If a kier is used, as I have already said, it should be coated with lime, cement or silicate. It is sufficient to say that the equipment should be carefully considered and advice from someone competent to give it should be obtained before starting the process off.

The material may be bleached in one of three ways, i. e., completely submerging the goods in a dormant bath, in which case both the goods and the liquor are still, by moving the liquor through the material or by moving the material through the liquor. An open vat is an example of the first method. This type of equipment is one of the most expensive to operate under most conditions since it requires a comparatively large volume of liquor to a given weight of material. The goods cannot be packed too tightly or uneven results are very apt to be obtained. Once the vat is loaded it is difficult to replace any heat loss owing to the fact that there is danger of the goods in the bottom being overheated before those on top are raised to the desired temperature. By taking the open vat and adding a pump we circulate the liquor through the goods and in this way reduce the quantity of bleach bath required per 100 pounds of material and at the same time assure uniform heating throughout the mass of goods at all times. This is one of the most efficient methods of working. The third method of working is the reel machine in which the goods are circulated through the liquor constantly. This system is excellent for certain lines of material, and, as it is undoubtedly common knowledge to practically all of you, requires no particular comments.

Probably the three most important factors in the application of the peroxide solutions to textiles are: The temperature, alkalinity and ratio of goods to liquor. If these three phases of the process are kept under control the results from day to day and week to week should be uniform and the cost reasonable. In fact, the economy of the process depends upon the control of these three conditions. The temperature of the bath is exceedingly important, since the bleaching effect and the decomposition both depend upon it. Thus, cotton will bleach most efficiently from 175 to 185 deg. Fahr., and here I may add that I am speaking for the average conditions and not the unusual. There are times, of course, where cotton is bleached at a higher temperature, but for the average run of material in the vicinity of 180 deg. Fahr. is about the best.

The alkalinity is another important factor. There are any number of chemicals suggested for alkalining a bath, but comparatively few of them are satisfactory from the bleacher's standpoint. Some of them will throw down any iron which may be contained in the liquor, others are volatile or then again they may cause too rapid dissociation of the hydrogen peroxide. Sodium silicate is about the best for most purposes. It not only produces the desired alkalinity, but it also tends to give a slow, even evolution of oxygen. Where a bath is breaking down too quickly it is often due to too high an alkalinity. The main objection to silicate is the difficulty with which it is removed from the fibers. If a warm rinse is given first trouble from this sort may be avoided.

The strength of a peroxide bath is what determines its bleaching power. A pound of Solozone will not bleach four ounces of cotton in 100 gallons of water as well as a fraction of this amount in a quart of water. Therefore, it is advisable to use a minimum quantity of water with the maximum amount of Solozone permissible. Thus, 3 per cent of the weight of the cotton would give in a dormant bath a much weaker solution than in a vat where a minimum amount of liquor was employed and circulated. Therefore, from the standpoint of economy and cost, the ratio of liquor to goods is of vital importance. While no dogmatic statement can be made regarding the correct ratio of the liquor to goods, one may safely state under practically all conditions where the liquor is forced or moved through the goods greater economy will be obtained than with a dormant bath. Of course, there are other things to be considered, such as the handling involved, the type of material being processed, etc.

A great many of the colorists and chemists with whom we come in contact have the belief that sodium peroxide cannot be used on cotton at a reasonable cost. Now this is of paramount importance, because if any process is expensive, then regardless of the results obtained it does not, as a rule, meet with a great of favor in the eyes of the average mill man. But, as I have said before, the

ratio of goods to liquor is very important, the type of equipment employed, etc., have a great bearing upon the cost and all must be given a great deal of attention if the work is to be done at a reasonable figure. Chlorine, of course, is the bleaching agent most commonly employed for cotton, and one with which you are all thoroughly familiar, but yet if you compare the labor involved in the two processes rather than the price of chlorine compared to Solozone, you are very apt to be considerably surprised. There must also be considered the reduction in floor space, the smaller investment in equipment and the reduced depreciation. All of these factors have a strong bearing upon the cost. I do not mean to intimate that in any bleachery under any conditions Solozone and chlorine are equal and may be used at the same cost. This is not true. Anyone familiar with bleaching knows that it is impossible to make a statement of this sort. There are conditions where peroxide cannot compete successfully with chlorine, but there are also cotton plants in which chlorine cannot compete with peroxide when everything is taken into consideration. In order to prove of what value the process will be to a firm, our company has gone to a considerable expense in equipping bleaching outfits which are loaned without charge to mills for the purpose of conducting bleaching experiments under their own conditions, and it is surprising in how many instances, by working in this manner, we have been able to fully convince the mill of the economy of Solozone. The fact that the boiling-out and souring are eliminated from the process means a reduction in time which, of course, increases the production per unit and works to our advantage from the standpoint of safety. The increase in production is especially important. It cuts down the quantity of goods in process and also very often removes the necessity of buying additional equipment to take care of an increase in business. No acid touches the cotton being bleached with peroxide from the beginning of the process to the end. At no time does it come in contact with the liquor other than a mildly alkaline hydrogen peroxide bleach bath. The baths are made up of just sufficient strength to permit complete exhaustion for a satisfactory white. The goods may be processed overnight if preferred or during the day. Under favorable conditions we have been able to get two batches out of a machine per day. This is being done, in fact, in a Franklin process machine as well as in the kettles equipped with the circulating device explained before.

The peroxide white is permanent. The writer processed material at one of the prominent mills in Massachusetts in 1921. The bleach about equalled their chlorine white at that time. A sample was filed away until about a month ago when the package was opened and the material inspected. The mill superintendent pronounced the peroxide bleach after three years' storage "excellent." In fact, he could not find that it had changed at all. We have other customers who have done the same thing and it is rare, indeed, that we receive any complaint due to storage trouble with peroxide. Then the fact that there is no danger of leaving acid in the material from insufficient washing is another reason for safety. The softness or loftiness, the elasticity, the permanency of the white and the economy of the Solozone process are being recognized more and more by the trade.

We would especially urge that any mill having either a new proposition or an old problem on their hands submit the matter to us, as it is quite possible we would be able to give assistance. In fact, even though peroxide is considered too expensive by the management you may find that it is possible to cut the cost of bleaching considerably under the estimated figures. We are prepared at all times to offer cost calculations or other data regarding the processing of material with the peroxide. In other words, the services of the Roessler & Hasslacher Company and the facilities of the bleaching station are placed at your disposal.

APPLICANTS FOR MEMBERSHIP

Active

Arnold, Henry D., dye demonstrator and salesman, National Aniline & Chemical Company, Boston, Mass. Sponsors: William R. Moorhouse and A. E. Sampson.

Benger, Ernest B., chemical director, Du Pont Fiber-silk Company, Buffalo, N. Y. Sponsors: J. J. Sokolinski and H. Grandage.

Bengs, Carl, silk dyer, Cheney Bros. Company, South Manchester, Conn. Sponsors: K. B. Blake and W. M. Scott.

Forster, Conrad, textile chemist, Dedham Finishing Company, East Dedham, Mass. Sponsors: E. H. Killheffer and W. H. Zillessen.

Stehle, Richard B., dyer, Brehme & Stehle, Frankford, Pa. Sponsors: J. H. Hennessey and E. C. Bertolet.

Wallace, David G., Southern manager, Geigy Company, Columbus, Ga. Sponsors: A. W. Mungall and P. F. O'Neill.

Junior

Dawson, Jr., John, laboratory assistant, American Printing Company, Fall River, Mass. Sponsors: A. E. Hirst and W. E. Hadley.

Glickman, Bernhardt, student, Lowell Textile School. Sponsors: L. A. Olney and A. K. Johnson.

Kamena, John L., colorist, Grasselli Dyestuff Corporation, New York, N. Y. Sponsors: Charles A. Seibert and Bernhard Borrmann.

Klumpole, Edw. W., representative, Oakley Chemical Company, Charlotte, N. C. Sponsors: J. E. Moore and C. H. Stone.

Musgrave, George William, student, Lowell Textile School. Sponsors: A. K. Johnson and L. A. Olney.

Phillips, Thomas, assistant dyer, Wood Worsted Mills, Lawrence, Mass. Sponsors: L. A. Olney and Charles L. Howarth.

Prevost, Francis H., dyer, H. C. Townsend Cotton Mill, Anderson, S. C. Sponsors: J. B. Moore and C. H. Stone.

Smith, William C., student, Lowell Textile School. Sponsors: A. K. Johnson and L. A. Olney.

Tanguay, Gerard, student, Lowell Textile School. Sponsors: A. K. Johnson and L. A. Olney.

Quenstedt, Henry E., sales engineer, Oakley Chemical Company, Atlanta, Ga. Sponsors: J. B. Moore and C. H. Stone.

CHANGES OF ADDRESS

Adams, C. C., 56 Broadway, Haverstraw, N. Y.

Chase, Harold D., 51 Bloomfield Avenue, Passaic, N. J.

Dabbs, B. R., Box 485, Chattanooga, Tenn.

Delys, Rene J. B., 49 Homestead Road, Woonsocket, R. I.

Dogin, Louis J., 575 Putnam Avenue, Brooklyn, N. Y.

Durgin, W. Ernest, 154 Dudley Avenue, Roslindale, Mass.

Fletcher, Allison R., 49 Puritan Avenue, Providence, R. I.

Huntington, A. P., 103 Governor Street, Providence, R. I.

Innes, Archie K., 84 Pine Street, Franklin, N. H.

MacIntyre, James F., National Aniline & Chemical Company, 40 Rector Street, New York, N. Y.

Nichol, Samuel J., Box 1054, Lowell, Mass.

Russell, Joseph W., General Laboratory, Bliss Fabyan & Co., Three Rivers, Mass.

ASSOCIATION BADGES

Those who attended the Annual Meeting at Providence had an opportunity to examine and purchase the new lapel button badges which were there distributed by the Secretary.

For the benefit of members who were unable to attend the meeting an illustration of the badge is shown herewith.

The three "rings" are enameled in red, yellow and blue, respectively, and the initials and border are brought out in gold. The general effect is exceedingly attractive.

Badges may be secured at $1.50 each by addressing the Secretary.

WALTER E. HADLEY,
5 Mountain Avenue,
Maplewood, N. J.

AMERICAN
DYESTUFF REPORTER

Devoted to the use and application of dyestuffs and the mechanical equipment incidental thereto.

LOUIS A. OLNEY
PROFESSOR OF CHEMISTRY AND DYEING, LOWELL TEXTILE SCHOOL
Directing Editor

CLAYTON HOAGLAND
Managing Editor

Published biweekly by
HOWES PUBLISHING CO., INC.
90 William Street, New York City

A. P. HOWES, *President* E. S. PREDMORE, *Secretary*

Subscription price $5.00 per year; Canadian $5.50; foreign $6.00

Vol. XIII December 29, 1924 No. 22

TWO DATES AND A RETROSPECTION

NOW that Christmas festivities are over and there faces us a date on the calendar that denominates an End, and, one square beyond, another date that denominates a Beginning, it is appropriate and natural that there should come a restrospection, a mental balancing of the columns and a mental closing of the books, for this past year 1924.

There is satisfaction rare and sweet in telling one's self that one's business has actually *moved ahead* in the swift, transitory procession of days designated on man's calendar as one year; that in this advancement it has achieved a higher, more estimable reputation; that not only has the *name* of the business justified the priceless faith of its customers, but that the product and the service which the name represents have also become more noteworthy, more useful and invaluable in their particular sphere of industry, than they were one year ago; that the noble and imposing code of ethics elaborately lettered and framed upon the wall above one's desk has been kept in sight, mentally and conscientiously as well as literally, in all the transactions of one's business during the past year; that as a consequence not only is there more honest silver in the till, but that one's latent wealth has also multiplied—one's intellectual wealth, the broader, freer outlook on life, the character more tightly knit, the personal reputation more firmly established, the warmer feeling of genuine good-will between one's customers and one's self, the respect attained and the friendships more solidly cemented, and the expanded sense of a deeper obligation toward the industry of which one's business is an integral unit—this is all wealth and it is extremely satisfying to retrospect upon its multiplication during the year past.

It is mightily inspiring, we repeat, thus to retrospect upon the material and abstract progress of one's business and one's self. But let us not fail to recognize that such retrospection and inspiration has fire in it and power And it follows that this power should not be wasted, but that it should be utilized as a precious personal incentive to strive to continue to progress materially and abstractly, and to *exceed* this last year's advance in the year that is now beginning.

THE ACHIEVEMENT OF THE IMPOSSIBLE

"WITHOUT the slightest fear of contradiction I state, upon the basis of official records, that, taking the weighted average of dyes as a whole, American consumers are to-day paying less for dyes than are the consumers in any other country in the world; and, more than that, if the present-day value of the dollar be taken into consideration, American dyes are being sold cheaper to-day in America than were German dyes before the war."

So states Dr. Charles H. Herty in his annual report before the Synthetic Organic Chemical Manufacturers Association, published elsewhere in this issue. Although this matter of domestic dye prices has been given space each year in the annual Government Census of Dyes, not until now has anyone analyzed the price figures as Dr. Herty has, and so no one has before this reached such an amazing conclusion. Dr. Herty believes firmly in the strength of statistics. He makes no broad statements of dye production or dye prices unless they are supported by concrete figures.

Just as it has been evident from year to year that domestic dye production was mounting, so it has been disclosed with the publication of each census report that domestic dye prices were steadily dropping. The average *pre-war price of imported dyes to consumers* is computed have been from forty-four to fifty-three cents per pound. In 1923 the average price of domestic dyes was reported as fifty-four and one-half cents per pound. Financial statisticians tell us that it now takes a dollar and a half to buy what a dollar would purchase in 1914. On this basis, then, our average 1923 price of domestic dyes, fifty-four and one-half cents, actually is equal to slightly over thirty-six cents, figured in pre-war dollars.

No further proof of the truth of Dr. Herty's statement is required when one notes that it is the decrease in price of the few bulk colors that has brought down the weighted average price; and these bulk colors constitute nearly 50 per cent of domestic consumption. When synthetic indigo dropped from a dollar and forty-two cents in 1917 to twenty-three cents in 1923, when Sulphur Black dropped in the same period from a dollar to twenty cents, Orange II from a dollar to thirty-seven cents and Direct Black from a dollar and four cents in 1919 to forty-three cents in 1923, it is obvious that there has been a wonderful decrease in domestic production costs. That this decrease is largely due to the ingenuity and perseverance of the American dye manufacturer and the employment of advanced industrial and scientific methods goes without saying.

With each new color produced the story has been the same: production and research costs high at the start,

with resulting high prices. But watch that new color over a period of two or three years and a sharp decline in price manifests itself—paralleling the dropping cost of production which follows more efficient manufacturing methods.

"It takes time" has been the watchword of our dye manufacturer, and it also takes the tariff we now have to protect our manufacturers while they are patiently, persistently "taking time" to perfect their methods of production and distribution. But the credit that is due the triumphant high-tariff advocate should not exceed the praise that we must bestow upon the man who makes the dyes. The tariff only protects him. It adds nothing to his skill as a manufacturer. It is up to him and to his laboratory staff to produce and perfect and cut costs until he is able to pull down the initial price of each new color, fifty, sixty, seventy per cent, and still make his well-earned though often barely adequate profit. And all this time he must keep in sight his goal of high quality. He must not only strive to produce a range of colors closely approximating the foreign range; he must also keep before him the urgent need of equalling and excelling those forign colors in quality and in price, and this he has achieved, to such a degree as to have earned the recognition of the world's dye-consuming industries.

American dye manufacturers, in maintaining the present low price level, can claim another victory, one that deserves mention because of the very bitter opposition which the dye industry withstood in its long battle for adequate tariff protection. That our manufacturers now offer their colors at prices that average lower than anywhere else in the world and lower than those existing before the war, when the purchasing power of the dollar is considered, forcefully refutes those low tariff and free trade advocates who stoutly maintained only a few years ago that a high tariff would work for an American dye monopoly with a scale of sky-high prices. Perhaps those opposing forces failed to consider American industrial progress and particularly the ingenuity of American chemists. At all events their contentions and dark prophecies are now swept away by indisputable statistics.

BRUINIER JOINS NEWPORT

A. G. Bruinier, whose likeness appears in the next column, has recently joined the sales organization of the Newport Chemical Works. He will be attached to the main office of the company at Passaic, N. J., and will act as assistant and adviser to Dr. E. H. Killheffer, vice-president of the company.

Mr. Bruinier is widely known and possesses a host of friends throughout the dyestuff and textile industries. Born in Amsterdam, Holland, he entered the employ of Kalle & Co., in Biebrich, Germany, when only sixteen years of age. Four years later he was transferred to their New York branch, and after holding various offices, including that of manager of the New England district with headquarters in Boston, he was, in 1902, elected president, treasurer and general manager of the American branch of Kalle & Co. He retired from active business in 1914 and moved to England where he resided until 1918 when, the war having destroyed the income which he enjoyed from funds invested in Germany, he was compelled to re-enter active business.

Mr. Bruinier enjoys the reputation of having been one of the keenest dyestuff executives in this country, and the Newport Company is to be congratulated upon having secured his services.

AMERICAN CHEMISTS' INSTITUTE ELECTS MEMBERS

The following members were elected at the December 22, 1924, meeting of the American Institute of Chemists: Howard Coon Parmelee, editor Chemical & Metallurgical Engineering, New York City; Herman Maisner, miscellaneous chemist for the Fort Worth Laboratories, Fort Worth, Tex.; Paul Miller Giesy, director of Brooklyn Research Laboratories, E. R. Squibb & Sons, Brooklyn, N. Y.; Wilmer Gerrish Wilson, student, Colorado School of Mines, Golden, Colo.; Miss Anna E. Mix, chemist, Bureau of Chemistry, Washington, D. C.; William S. Berry, associate chemist, Philadelphia Navy Yard, League Island, Pa.; Ismar Ginsberg, consulting chemical engineer, New York City; David Caesar, chemist, May Chemical Works, Newark, N. J.; Benjamin Levitt, chief chemist, Chas. W. Young & Co., Philadelphia, Pa.; Maurice L. Dolt, chemist, Calco Chemical Company, Bound Brook, N. J.; Gustave P. Metz, vice-president H. A. Metz Laboratories, Inc., Brooklyn, N. Y.; Clarence P. Linville, metallurgist, Calco Chemical Company, Bound Brook, N. J.

The Nomenclature of Dyestuffs*

By MAJOR R. W. FRENCH

Medical Department, United States Army.

WHILE the biologist does not require many dyes as stains, he must have dyes of a certain definite composition, inasmuch as the results must often hinge on very minute differences with which a certain tissue or bacteria may stain with a certain dye under various conditions. Upon this small difference the pathologist may be forced to make his decision as to whether or not a given tissue is malignant or benign; whether or not it is advisable for the surgeon to perform a radical operation, with its consequent possibilities.

To insure satisfactory stains, several factors enter into the problem from the standpoint of the dye manufacturer. First, what dye does the biologist want; and, second, how pure must it be. In considering the first phase of the problem the immediate question is largely one of nomenclature. Perhaps this is best expressed in the following letter received recently from a manufacturer:

"The main difficulty we have is the names used by the various makers for the same dye. Any system that would give a common nomenclature or at least some reference whereby we could know that a dye of one maker is the same as that of another is highly desirable."

Two aids are available in straightening out this problem partially—the Schultz Farbstofftabellen and the Colour Index. To determine the relative distribution of these publications and the desirability of adopting either one or both nomenclatures, 118 questionnaires were sent to manufacturers, scientists and dealers most interested in the industry. From a partial return the following facts were gleaned:

Are you familiar with the new Colour Index?
Yes, 31; No, 5.
Do you have a copy?
Yes, 28; No, 7.
Do you contemplate procuring one in the near future?
Yes, 6; No, 1.
Do you favor the Schultz numbers?
Yes, 21; No, 1.
Do you favor the Colour Index numbers?
Yes, 18; No, 1.
Do you favor both numbers for a time?
Yes, 25; No, 1.

Some of the remarks on the returned questionnaires were most interesting in indicating the general trend regarding nomenclature: Do you favor Schultz numbers? "Not since publication of Colour Index"; "The Colour Index describes a number of colors not contained in the Schultz, especially stains, etc., therefore should be favored"; "Schultz numbers will probably be retained for some time to come. The Colour Index is a most important work, as it gives the names of dyes which are certain to replace the original German products and makers of same. In course of time it is expected to be the standard work"; "The Colour Index being a newer book, the numbers in it should be favored by everyone connected with the industry. However, until the Colour Index has the wide circulation of the Schultz there will be confusion. The Schultz numbers being given in the Colour Index, the colors can readily be identified by their Schultz numbers by owners of the Colour Index, but the owners of the Schultz will have difficulty in identifying the Colour Index numbers."

In the standardization of dyes for biological stain purposes, it has been found desirable to use a more scientific nomenclature than generally prevails in the technical world, where it seems as though there are almost as many synonyms for a given dye as there are manufacturers, each factory having its own particular name. In some respects this may be a good feature to the trade, but in another way it is more or less certain to result in endless confusion.

An aid in preventing this confusion is the use of a designating number which specifically requires a dye of a certain chemical composition. This, so far as it goes, is satisfactory. However, again it has its drawbacks, in that the chemical composition of many dyes is uncertain and not exactly what it is supposed to be, so even this fails to insure the same dyestuff.

The Colour Index has in a measure clarified the situation by a much more extensive listing than that of the Schultz Farbstofftabellen, as well as by the recognition of many dye manufacturers in the United States and England which are not considered in the German publication. This list, though, is incomplete in this respect, and cannot be of the greatest use until it covers the field much more comprehensively.

From reports it seems that this is largely the fault of the manufacturers, in that many of them failed to give the proper listing of their products or neglected altogether to co-operate with the publishers of the Colour Index. This is to be decried, and should be corrected at the earliest practicable date, as the usefulness of such a publication depends to a large extent upon its completeness.

*Published by permission of the Surgeon-General of the War Department.

In connection with a more complete listing of dyestuffs under their proper numbers or designations, it also should be pointed out that care should be exercised to see that the given dye is truly represented. This often is not the case. Too many times, probably for trade reasons, faulty information regarding the chemistry of a dye is given which but serves to make the situation more confusing to those endeavoring to procure a certain specific work. This has been a most important question from the standpoint of the biologist, and only too often has a dye been found to be entirely mislabeled; and this has only too often directly resulted in the discrediting of American-made dyes without sufficient reason if accuracy of designation had been used.

With the co-operation of the American manufacturer in securing a more complete listing of the dyestuffs on the American market under their correct designation, it seems timely to accept the Colour Index as a standard iin the English language which can and will meet all the needs of both the manufacturer and user of dyestuffs, either technical or scientific. It is certainly logical to assume that it will be easier to make the English publication a comprehensive list than to expect a revision of the Schultz Farbstofftabellen to take into consideration the many manufacturers of dyestuffs outside of Germany.

As a list of American dyestuffs with their Schultz numbers, the 1924 Year Book of the American Association of Textile Chemists and Colorists is quite complete and affords information obtainable from no other source. This used in conjunction with the Colour Index or the Schultz Farbstofftabellen will serve to show possible basic sources of dyestuffs in the United States. From the standpoint of the biological user of dyestuffs it probably will be advisable to investigate these commercial products for small variations which may interfere with their use as biological stains, but the comprehensive list giving trade synonyms affords an excellent starting point in bringing order out of chaos to the more or less lay user of dyes.

Dye Application in China

Part III

Silk Dyeing—Degumming Shops—Dyeing Shops—Paper Dyeing—Dyeing Methods—Sizing Brush Dyeing —Carpet Dyeing—The Dyer Himself

By WOO DONG CHI

[*A general description of native dyehouses and methods for dyeing cotton yarn and cloth, silk yarns and cloth, paper in sheets, and wool carpet yarn, with vegetable extracts and synthetic coal tar colors.*]

Dyeing of Silk

LET us turn to a consideration of the dyeing of silk. As with cotton, this is carried out both in the form of yarn and piece goods. There appears to be comparatively little export of either dyed yarn or piece goods from China; the bulk of the colored silk produced is consumed by the Chinese themselves, although the demands of the foreigners resident in the treaty ports and the constantly increasing tourist trade are appreciable factors.

There are some modern silk weaving and dyeing plants in Hangchow, Shanghai and Canton. The staffs of these establishments have some foreign training, mostly in Japanese procedure. The bulk of the business, however, is still in the hands of the native-trained workman, and it is these people and their shops which we shall describe.

It is usual for the degumming of the silk and the dyeing to be done in separate shops. The degumming esablishments will congregate in a group in one section of a village, the dyeing shops in another. The connecting link between them is the silk cloth merchant, who buys the reeled silk from the farmers or steam filatures, and who owns it until the finished cloth is sold to other cloth merchants or is retailed over his own counters. In dealing with such valuable merchandise special precautions have to be taken. It is the custom to deliver the material to be treated to the particular shop about sunrise, the degumming or dyeing must be done the same day, and the silk returned to the owner's warehouse (or "godown," as it is called) before sunset.

Degumming Shops

Describing the degumming shops first, we may say that they are of the same general type as the dyehouses mentioned previously. The equipment consists of one or more kettles of around a hundred gallons capacity, built up with brick and cement around an iron dish, but differing from those previously described in that the entire inside of the vat is lined with sheet copper. These are posts for twisting and squeezing, and the usual drying frame.

For materials that are to be dyed a solid shade it frequently happens that weaving (on hand looms) takes place before degumming, hence each shop must be prepared to degum not only reeled silk and yarn but piece goods as well. In practice the silk is wet out

a little in kongs—extracted by twisting and piled into a kettle. The kettle is previously prepared by filling it half full of the cleanest water obtainable and adding the degumming agents. The following recipe is typical of that used in the Hangchow district:

In a vat of 125 gallons' capacity: 75 gallons of water, 50 pounds of silk piece goods, 2½ to 3 pounds soda ash, 2 liters milk of lime. Enter the wet-out material at about 75 deg. Cent., raise to a boil and boil one hour.

The material is then removed, washed and softened by steeping for a little while in a kong containing water in which rancid pig fat, from the nearest butcher shop, has been standing. The goods are squeezed out and dried on racks.

The liquor from the degumming bath is thrown away.

The interesting points about this process are: (1) The temperature at which the work is carried out; (2) the addition of lime and soda ash (forming caustic soda), and (3) the absence of soap.

Dyeing Shops

The dyeing shops do not differ much in their equipment from those that do degumming. There are usually three or four copper-lined kettles of from 30 to 150 gallons' capacity, used mostly for dyeing blacks. Other colors are dyed without the aid of outside heat in a kong.

Vegetable Black, as described under cotton dyeing, is still used to some extent, but mostly for the cheaper qualities of silk. For much of the black produced direct colors are used. Such colors are applied at a boil without salt, soap or "boiled-off" liquor. Where the color has been put on at a boil, a small quantity of vegetable oil is beaten up into an emulsion with water and used as the final wash water before drying. This oil treatment is frequently given after cold dyeing.

The bulk of the fancy shades are produced on yarn. The skeins are sent to the dyehouse with a small swatch of the desired color to be reproduced. The hanks are wet out in water, squeezed and entered into the dye bath one at a time. Dyeing is done in a kong. Fifteen or twenty gallons of hot water are put into the pot. The colors to be used are made up in stock solutions and kept in whatever small receptacles are available. One dyer and a helper will work at each kong. Sufficient of the various stock solutions are poured into the vat, without measuring, as the judgment of the dyer dictates. All the hanks of each particular batch are dipped into this bath, one at a time, given a few turns, twisted, and piled to one side. The purpose of this dip is to approximate the desired shade, keeping on the light side. When the whole batch has been put through the dye bath once, the bath is carefully replenished from the stock solutions of color and each skein entered again and turned until an exact match is obtained. Such is the experience and skill of these dyers that fifty or hundred pound batches of yarn are dyed with rapidity and such exactness, in spite of the apparent haphazard manner of adding the color, that the hanks match each other and the sample submitted.

Basic colors are used mostly for this sort of work. Of the said colors, only two, scarlet and orange, are consumed. Direct colors are represented by black and a little brown.

A full line of basic colors is usually in stock in each silk dyehouse. Methyl Violet 2B, Malachite Green, Auramine, Basic Fuchsine, Victoria Blue B and Water Soluble Nigrosine are the colors most commonly seen in use.

After dyeing, the yarn is rinsed two or three times, the last rinse water containing some vegetable oil beaten into an emulsion.

Drying is mostly done on pole racks under mat roofs, but some of the larger dyehouses have installed drying rooms. Such a room is about 6 feet high, 7 or 8 feet wide, and about 12 feet long. It is closed in by brick walls covered with mud plaster. At one end is a door. Over the door is an opening about 1 foot square, fitted with a sliding shutter, which serves for ventilation. The room is heated by a charcoal fire built in a shallow trench cut in the ground, at the opposite end from the door. The hanks of yarn are hung on poles as high up from the floor as possible. Such a drying room is used only when damp, rainy weather or unusual haste makes natural drying in the open air out of the question.

Paper Dyeing

As noted in the general remarks at the beginning of this article, paper is not dyed in the form of pulp. Although there is still some production of special grades of paper in China by ancient methods, and also a few modern factories, still by far the bulk of the consumption is supplied by imports from abroad. Most of this importation consists of plain, thin, rather brownish unsized paper in sheets. Such paper, in varying degrees of quality, is kept in stock by small shops in each village.

The Chinese use colored paper for decorations for their houses, for the floats carried in their elaborate marriage and funeral processions, for all sorts of decorations at the time of their festival and new year celebrations, for wrapping fireworks, and in their advertisements, books, pamphlets, letters, and even personal calling cards. Red is the most common color. It signifies good luck. Violet, blue, green, orange and yellow find their appropriate uses. Acid reds, such as Cassella's Brilliant Ponceaus, and similar colors are used almost exclusively on this material. More acid red is sold in China than any other color except Indigo and Sulphur Black.

The coloring of this paper is done to the order of each customer by shops which specialize in this kind

of work, just as cotton and silk are dyed in special shops.

Dyeing Methods—Dip Dyeing

There are two general dyeing methods for paper, depending on whether the paper is to be colored on both sides or only one. For the thin, cheaper grades of paper it is customary to dye on both sides. This is done by passing the material through a small trough of color solution. The trough will be about 6 inches wide, 4 to 6 inches deep, and longer than the average sheet of paper handled is wide. In the bottom of the trough is fixed a stout glass rod. Each sheet of paper is passed into the trough, under this rod and out on the other side. The sheet is hung over a small bamboo rod which is placed on a rack at one side of the room, or in some shady place in the courtyard, to dry. During damp or rainy weather one room of the shop may be set aside as a dry room and is then heated by a charcoal fire kept burning in a trench dug in the floor.

Sizing Brush Dyeing

Generally the heavier grades of decoration and wrapping paper are sized with a mixture of alum and glue. In this case both sizing and dyeing are done on a large table; furthermore, the sizing and dyeing are done on only one side. In some localities specialization is carried so far that the sizing is done in one shop and the dyeing in an entirely separate one.

For sizing, the alum is dissolved in water, an equal amount of native glue added, and the mixture brushed onto the paper with native-made brushes of from 4 to 24 inches in width. When one sheet has been coated evenly, it is hung up at one side over a small bamboo stick to dry.

When dry, a pile of the sized sheets are laid out flat on the table—usually with the sized side uppermost—and the color solution brushed on—using the same kind of a brush as for the sizing. These sheets, too, are hung up to dry over small wooden rods.

It is usual to make up concentrated solutions of the colors—say, about one part color to twenty-five to thirty parts (by weight) boiling water—about three liters at a time in a shallow dish—wide enough so that the large brushes may be dipped in easily.

Construction of Brushes

The construction of the brushes used is peculiar. They are made up of many small units. Each unit is a piece of bamboo about half an inch in outside diameter and 6 to 8 inches long. One end of each piece of bamboo is cut off half an inch beyond a joint, and into the socket thus formed is glued a bundle of pigs' bristles. The handle of the brush thus formed has two slots cut through it. A number of these small brushes are pinned together by slipping a piece of split bamboo through each set of slots, and thus assembling a brush as wide as the work in hand and experience dictate. When a row of these small brushes have been pinned together, they are fastened permanently by wedges.

Carpet Dyeing

The manufacture of the so-called Tientsin carpet or rug is an industry peculiar to China. Although practised for very many years, it is really since the last war that it has attained considerable size. It is a subject of more than passing interest, we believe, to the color chemists and dyers of the United States, and we hope to describe it in detail in a later article. For the present we shall confine ourselves to an outline of the general dyeing process.

The warp and filling of these carpets are made of heavy cotton yarn and are not dyed. Sheep's wool is used in the majority of cases for the pile. It is this material which is a characteristic of the rug. It is dyed in a wide range of colors. The wool is obtained from northern China, Manchuria and Mongolia. It is sent to the district of which Peking and Tientsin are the centers as raw wool, and there spun into yarn. A few attempts have been and are being made to establish modern spinning plants in this region, but at this writing practically all spinning is done by hand in the home.

Dyeing is done in the yarn and by dye shops which specialize on this sort of work—the dyed yarn then going to the carpet-making shops. There is a tendency for the larger carpet factories to have their own dye shop on or very near their own premises.

It is well understood, we believe, that all the work of weaving these carpets is done by hand.

The wool is spun in the grease. It is scoured a little before dyeing. The usual procedure is to fill, say, a hundred-gallon vat two-thirds full of hot water, add about one-half per cent (on weight of goods) of soda ash, enter the material in hanks—simply piling it in until the vat is full—working the material back and forth a few times and giving a quick rinse, and then going on with the dyeing.

The dye shops are given a certain number of pounds of wool yarn to dye—the material is very greasy and dirty—a condition which has been aggravated by the fact that every merchant who has handled the wool previously has dealt on a weight basis—the dyer has to deliver a definite number of pounds of dyed wool—so he removes only as much foreign matter as is absolutely necessary to get the minimum evenness and fastness acceptable by the weaver.

Practically all Tientsin rugs produced in China today are dyed with natural coloring matters. Attempts are being made to use artificial dyes, but most of the progress in this direction is haphazard and without competent technical direction. There are no real ob-

stacles in the way of the use of coal-tar colors for this class of work, however.

The bulk of all Tientsin carpets and rugs produced are for export. At present the United States offers the largest market. Before the carpets are distributed by the foreign (American, for instance) importers, they are submitted to a chemical "wash," the object of which is to luster the wool and soften the colors to an appearance of great age. This "wash" has an important bearing on the colors used.

All vegetable colors employed are affected more or less by this chemical treatment. Natural Indigo (much of the work is now done with synthetic Indigo) is affected least, while the various natural reds are the most fugitive. The native rug manufacturer has gotten around some of this difficulty by dyeing a much deeper shade than desired in the finished rug as shown in an American department store—and wasting half the color in the "wash."

Of the primary colors, blue predominates largely. It is produced entirely with Indigo. Next comes yellow, with red last. Yellow and orange are produced on an iron mordant using an extract made from a kind of grain resembling wheat, called "whei mei." Red is obtained mostly from native red woods such as certain varieties of peach and plum trees. The brown used might be cutch, although the writer has not been able to confirm this. Both red and brown are applied on an iron mordant. There is a small amount of black used which is the same color as that previously described under the dyeing of cotton.

With the above colors the Chinese carpet dyer produces a very wide range of shades, varying from all sorts of delicate pastels (which, by the way, entirely disappear in the "wash") to pleasing maroons, deep browns and glaring oranges, greens and violets, the latter of which are toned and softened by the "wash" to the antique effects so much in demand by the Occidentals.

Dyeing Process

The dyeing is carried out in the usual native form of kettle ranging in capacity from 100 to 300 gallons of water and built up around an iron dish.

This wool-dyeing district is near coal fields, so that coal is always used for fuel. The dyers experience considerable difficulty in matching shades, and make a practice of dyeing all the yarn for a particular shade in each rug at one time. This leads to very large batches in some cases, with frequent overcrowding of the kettles with correspondingly poor results.

The Dyer Himself

We believe that the principal phases of color application in China have been described in sufficient detail to give the American reader interested in textile matters a general idea of dyeing practice in this country. Before closing, however, we might comment a little on the human element involved in this trade.

The dyehouses are operated by a manager who represents the owner. He is responsible for the success of the enterprise. He must see to it that the material to be dyed arrives, is properly colored and finished, and is returned on time. Usually he buys the dyestuffs, although in this he is influenced by his immediate subordinate, the "boss" or No. 1 dyer.

This latter is a practical man, one who has served his apprenticeship at his trade and has risen above his fellows through merit. Under him are the laborers.

As mentioned, the apprenticeship system is in vogue in this trade as in all trades in China. A boy is apprenticed very young. He works for his "keep," a few cloths and a very small bonus at China New Year. At the age of around twenty he will have had sufficient experience to become a "journeyman."

The dyers, like other members of other trades, are strongly organized in "unions," although the usual word used for translating the Chinese term is "guilds." Such organizations date back to very ancient times. They strike nearly as frequently as their Western brethren, and with the same degree of success.

Wages

A dyer is given living quarters and food by his firm, the dyehouse, and also a small monthly wages based on a rate of from 25 to 50 cents (silver) a day. At the end of the Chinese calendar year it is customary to pay a bonus. In the case of a dyehouse manager this may be quite a substantial amount, running to upward of a thousand dollars silver. In the case of the dyer the bonus may be 10 per cent of his usual wage for the whole year.

These men are supposed to work every day in the year. As a matter of fact, they never work very hard for long periods of time. There are always several hours of daylight in each day when no work is done. Wet weather will stop work in many dyehouses, because there are no drying facilities except in the open air. There are festival days in the spring and fall when work is slack for a week or so while accounts are settled roughly. There is the rather long break at China New Year, when, for two weeks before and after, the dye shops close so that the workmen can return to their homes for a time. In the northern provinces the cold weather usually curtails or entirely stops dyeing operations. In most parts of the country the summer calls many dyers to work on the farms.

In spite of all these exceptions, we may consider the average Chinese dye coolie a laborer who works day after day, without Saturday afternoon, Sunday or holiday to break his routine, for a money wage varying from 10 to 25 cents per day in United States currency.

Dyestuff Tables

A List of the Principal American-Made Colors with Their Properties and Fastness Characteristics

[NOTE: The publishers of The REPORTER have secured more or less complete data in regard to many of the dyestuffs which are at the present time being manufactured in the United States. As the following material has been brought together from various sources, they realize that errors are quite likely to appear, and it is earnestly requested that any readers who find errors or who are able to give additional information will communicate with the publishers in order that this material may be made as correct, complete and up to date as possible. These tables will appear serially until all colors upon which we have data shall have been covered. The publication of this data was begun in the issue of March 10, 1924.]

BENZO FAST SCARLET GS

(Schultz No. 279)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Cotton, wool and union dyeing.

USUAL METHOD OF DYEING: Glauber salt and soda or common salt. The color exhausts better with common salt than with Glauber salt and soda.

SHADE: Brighter and yellower than 4BS.

SHADE BY GASLIGHT: Brighter.

SOLUBILITY: About 20 grains per liter.

LEVEL: Good, but inferior to Thiazine Red (S-197) in light shades.

EXHAUSTS: Inferior to Benzo Purpurine.

FASTNESS TO:

Acid: Fast against dilute mineral acids.
Alkali: Fast; equals Benzo Purpurine (S-363).
Chlorine: Shade goes much yellower.
Cross-Dyeing: Fast to acid cross-dyeing.
Fulling: Satisfactory on wool.
Ironing: Turns redder with heat.
Light: Much faster thn Benzo Purpurine. Equals Geranine (S-118).
Perspiration: Fast.
Rubbing: Crocks off somewhat.
Scouring: Not fast; bleeds.
Wahsing: On cotton, very moderate. Fast on wool.
Water: Moderate on cotton.

OTHER PROPERTIES: Dyes cotton cold. The color is suitable for the dyeing of mercerized goods and for cross-dyeing with Aniline Black.

DYED BY OTHER METHODS: Topped with formaldehyde, the color is faster to washing.

ON UNIONS: Cotton-silk unions: Dyed in a neutral Glauber salt bath with soap, the silk remains almost white and can be cross-dyed. Cotton-wool unions: In a neutral bath the cotton is dyed considerably darker. By long boiling, however, both fibers are dyed the same shade.

ON OTHER MATERIALS: Gloria: The silk remains lighter. Artificial silk: Very bright shades are produced. Silk: Dyed in a bath of boiled-off liquor broken with acetic acid, very bright shades of moderate fastness to water are produced. Wool: A bright red of excellent fastness to fulling is produced.

PRINTING: Suitable for printing on slubbing on wool. Printed neutral. Cotton is printed with phosphate of soda and is discharged white with sulphocyanide of tin, and can be discharged pink with oxidizing agents.

REMARKS:

Benzo Fast Scarlet 4BS: Similar in shade to Benzo Purpurine 4B (S-363). In light percentage, somewhat bluer than Benzo Fast Scarlet GS. Faster to hot pressing than Benzo Purpurine 4B. Faster to rubbing than Benzo Purpurine 4B. On silk this color is not as bright as some other reds. On Gloria it does not dye evenly, as the silk remains lighter than the wool. It is very suitable for cotton-silk unions, as it leaves the silk almost white in an alkaline bath and on account of its good fastness to acid it can be cross-dyed in an acid bath. It is also suitable for cotton-wool unions, as it goes on the cotton in a neutral bath, while the wool is hardly tinted.

Benzo Fast Scarlet 8BS: Properties same as 4BS, except that 8BS is bluer an clearer.

COMPETING PRODUCTS: Made in the United States by E. I. du Pont de Nemours & Co.; National Aniline & Chemical Company; Newport Chemical Works; Amalgamated Dyestuff & Chemical Works.

BISMARCK BROWN

(Schultz No. 283)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Cotton.

USUAL METHOD OF DYEING: On a tannin mordant. Can also be used for topping substantives.

SHADE: Dark brown.

SOLUBILITY: Best at 140 deg. Fahr. with acetic acid. Decomposed at the boil.

LEVEL: Poor.

FASTNESS TO:

Acid: Fast.
Alkali: Very moderate.
Chlorine: Fair.
Fulling: Fair when topped with tannin, but bleeds badly into whites.
Ironing: Fast.
Light: Fairly fast for a color of this class.
Rubbing: Crocks on all fibers.
Scouring: Moderate; scours off.
Washing: Moderate; bleeds.
Water: Moderate; bleeds off.

OTHER PROPERTIES: Largely used in leather dyeing.

ON OTHER MATERIALS: Silk: Can be dyed with boiled-off liquor neutral. Not much in use. Jute: Can be dyed neutral at 140 deg. Fahr. Paper: Good substitute for cutch. Gives deepest shades on unbleached cellulose. Wool: Can be dyed with acetic acid; color not very fast on this fiber.

PRINTING: Not suitable.

COMPETING PRODUCTS: Made in the United States by American Aniline Products, Inc.; Atlantic Dyestuff Company; Central Dyestuff & Chemical Company; Commonwealth Color & Chemical Company; Croton Color Company; E. I. du Pont de Nemours & Co.; Essex Aniline Works (Selling Agents, Grasselli Dyestuff Corporation); Heller & Merz Company; National Aniline & Chemical Company; Grasselli Dyestuff Corporation; Palatine Aniline & Chemical Company (Selling Agents, F. E. Atteaux & Co., Inc.); Sherwin-Williams Company.

BISMARCK BROWN 2R
(Schultz No. 284)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Cotton.

USUAL METHOD OF DYEING: On a tannin and tartar emetic mordant.

SHADE: Redder than S-283.

SOLUBILITY: Best dissolved at 140 deg. Fahr. with acetic. Decomposed at the boil.

LEVEL: Poor.

FASTNESS TO:
- **Acid:** Fast against acetic.
- **Ironing:** Shade returns on cooling.
- **Perspiration:** Not fast to perspiration.
- **Rubbing:** Crocks on all fibers.
- **Washing:** Bleeds badly.
- **Water:** Bleeds badly.

DYED BY OTHER METHODS: Developed on the fiber with para, somewhat faster.

ON OTHER MATERIALS: Largely used in leather dyeing.

DISCHARGING: Discharges white with hydrosulphite.

COMPETING PRODUCTS: Made in the United States by Amalgamated Dyestuff & Chemical Works (Selling Agents, John Campbell & Co.); American Aniline Products, Inc.; Central Dyestuff Company; Cincinnati Chemical Works; Croton Color & Chemical Company; E. I. du Pont de Nemours & Co.; Dye Products & Chemical Company; Heller & Merz Company; Grasselli Dyestuff Corporation; National Aniline & Chemical Company; Commonwealth Color & Chemical Company; Palatine Aniline & Chemical Company (Selling Agents, F. E. Atteaux & Co., Inc.); Calco Chemical Company.

PALATINE CHROME BLACK
(Schultz No. 288)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Wool.

USUAL METHOD OF DYEING: Top chrome.

SHADE: Bluer than Diamond Black PV.

SHADE BY GASLIGHT: No change in shade.

SOLUBILITY: Better than Diamond Black F.

LEVEL: Dyes level.

EXHAUSTS: Well.

FASTNESS TO:
- **Acid:** Fast.
- **Alkali:** Fast.
- **Carbonizing:** Stands carbonizing.
- **Cross-Dyeing:** Equals Diamond Black PV.
- **Fulling:** Inferior to Diamond Black PV. Equals Diamond Black F.
- **Light:** Excellent.
- **Potting:** Inferior to Diamond Black PV. Better than Diamond Black F.
- **Rubbing:** Crocks slightly.
- **Steaming:** Fast to dry steaming; equals Diamond Black PV. Better than Diamond Black F.
- **Washing:** Inferior to Diamond Black PV. Equals Diamond Black F.

SENSITIVE TO METALS, LIME: Somewhat sensitive to metals.

MACHINE DYEING: Suitable.

DYED BY OTHER METHODS: Not suited to other methods of dyeing.

ON UNIONS: White silk-effect threads are stained. White cotton-effect threads are stained when the color is dyed top chrome on wool.

ON OTHER MATERIALS: No interest.

COMPETING PRODUCTS: Made in the United States by New England Aniline Works (Selling Agents, U. S. Color & Chemical Co.)

ACID ALIZARINE BLACK SN
(Schultz No. 289)

COMPOSITION: Disazo.

SPECIALLY SUITABLE FOR: Wool pieces, yarn and loose wool.

USUAL METHOD OF DYEING: Top chrome with acetic and sulphuric acid.

SHADE: Very bluish black.

SHADE BY GASLIGHT: No change in shade.

SOLUBILITY: Good.

LEVEL: Dyes level as a black.

EXHAUSTS: Well.

FASTNESS TO:
- **Acid:** Fast.
- **Alkali:** Fast.
- **Carbonizing:** Fast.

Cross-Dyeing: Fairly fast.
Fulling: Excellent.
Ironing: Fast.
Light: Excellent fastness; thirty days' exposure without change.
Perspiration: Fast.
Potting: Fast.
Rubbing: Does not crock.
Steaming: Fast.
Sulphur: Fast.
Washing: Very fast.
Water: Fast; stands Markischer test.

SENSITIVE TO METALS, LIME: Sensitive to iron. Copper turns the shade redder.

ON UNIONS: White cotton-effect threads are stained. White silk-effect threads are stained.

ON OTHER MATERIALS: Wool-silk unions: Suitable.

COMPETING PRODUCTS: Made in the United States by Consolidated Color & Chemical Company (Selling Agents, H. A. Metz & Co.); New England Aniline Works (Selling Agents, U. S. Color & Chemical Company).

CORRESPONDENCE

Editor, AMERICAN DYESTUFF REPORTER,

Sir.—Thank you for your recent letter calling attention to Mr. Busby's correspondence about Nicol prisms in the December 1st issue of the AMERICAN DYESTUFF REPORTER.

Probably every colorist has been surprised at times by the beauty of color displayed suddenly by some familiar object which previously had never appeared beautiful. Probably every colorist has been at times dismayed by the difficulty of catching a second glimpse of this fleeting beauty of color.

The Nicol prism mentioned by Mr. Busby and in my previous article, is an instrument ordinarily capable of bringing into view these charming color tones which are only rarely seen under natural conditions of lighting.

So far as I have been able to determine the reasons, these occasional beautiful tones are due only partly to the arrangements of lighting as ordinarily practised. There is required also a proper polarization of light which if not obtained by some artificial means (for example, a Nicol prism) must be sought for in nature.

Such light is found in the blue sky at about 90 deg. from the sun so that on clear days there is an arc of polarized light in the blue sky. If one places a little wheel squarely on an axle and points the axle at the position of the sun then the spokes of the wheel will point to the circle of polarized light in the sky.

After locating the polarized light in this way or in some simpler way such as facing the palm of the hand to the position of the sun and allowing the outstretched fingers to point to the polarized light-source, one can then easily find a way of getting this light to shine on samples. After this, to see color well, one must avoid viewing the samples from any direction except one of the directions indicated by the spokes of the wheel as above described. For good success one should arrange matters so that if the hub of the indicating wheel were at the location of the sample, one spoke would point to the light-source and another spoke about one hundred and ten degrees (110 deg.) from the first would point to the observer while the axle points at the position of the sun.

The difficulty of this rule and the fact that the sun keeps moving and the frequent clouding of the blue sky all tend to explain why colors are so seldom seen to best advantages.

In future some especially convenient artificial helps to color seeing may be developed, but for the present it seems to me that the Nicol prism as described previously is a very handy instrument.

Yours very truly,

WALTER C. DURFEE.

BUTTERWORTH-JUDSON PLANT TO BE AUCTIONED

The enormous Butterworth-Judson plant in Newark, N. J., on the Passaic River and Newark Bay waterfront, opposite to the new plants of the Ford Motor Company and the Western Electric Company, which was erected during the war, is to be sold at receivers' absolute auction sale by Joseph P. Day, auctioneer, on Wednesday, January 21, 1925, at noon, on the premises.

The sale has been ordered by Thomas G. Haight and Henry G. Atha, receivers. A large percentage of the acid produced in this country for war purposes during the World War was manufactured in this plant.

The plant is located in the unrestricted district of Newark and it has about 1,700 feet frontage on the Passaic River and Newark Bay.

Along the same short line are the large plants of the Gulf Refining Company, Tanners Products Company, Balbach Smelting & Refining Company, Ballard Oil Equipment Company, Sun Oil Railroad Company of New Jersey and other representative industries.

The Butterworth-Judson property is intersected by the tracks of the Central Railroad of New Jersey (Broad Street branch) and is located within a few hundred feet of Lincoln Highway, so that it is within easy trucking distance of Newark, Jersey City and New York City, by way of the new Hudson River vehicular tunnel which now is nearing completion.

The property comprises about seventy-seven acres, all of which is solid ground, and a number of buildings containing several hundred thousand square feet of floor space, suitable for many varieties of trades and manufacture. The sale includes a fully equipped sulphuric acid plant now in operation, which should be attractive to any chemical concern.

As the property is to be offered first in about nine

separate parcels, and then as a whole, it presents manufacturers in general with an opportunity to acquire a factory site on which there are buildings having water and rail facilities with sidings from the Central Railroad of New Jersey.

With the development since the World War of the Newark Bay and Passaic River district under the direction of Joseph P. Day, there has been considerable activity in the immediate vicinity of the Butterworth-Judson plant in the last few months. Several properties have changed hands and several new plants are to be erected in the early future.

At the present time, in the vicinity of the Butterworth-Judson plant, the Public Service Corporation of New Jersey is one of the largest power plants in the East. Recently the Boston Excelsior Company, through Joseph P. Day, purchased the American Splint property at the confluence of the Passaic and Hackensack Rivers, directly opposite to the Butterworth-Judson property.

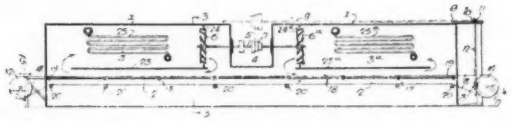
RECENT PATENTS

Drier

(1,508,283; September 16)

Edgar B. Kerst, Providence, R. I., assignor to Proctor & Schwartz, Inc., Philadelphia, Pa., a Corporation of Pennsylvania.

The combination in a drier, of a horizontal partition extending the full length of the drier; an endless conveyer, the carrying run of the conveyer being located



above the partition; two circulating chambers spaced apart and located above the carrying run of the conveyer; a circulating fan in each chamber; and means for driving the fans so that the air in one chamber is circulated in a direction opposite to the circulation of air in the other chamber.

Fur-Cleaning Process

(1,510,948; October 7)

Jennie R. McCormick, Wichita, Kans.

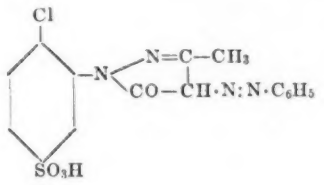
The process of cleaning fur consisting in rubbing the fur both ways with a cloth dipped in a mixture of substantially 83 parts benzol and substantially 16 parts chloroform.

Pyrazolone Dye

(1,511,074; October 7)

Leon W. Geller, Hamburg, N. Y., assignor to National Aniline & Chemical Company, Inc., New York, N. Y., a Corporation of New York.

As a new product, the dye having the probable formula and obtainable by combining diazotized aniline with 1-(2'-chlor-5'-sulphophenyl)-3-methyl-5-pyrazolone, said dyestuff in the shape of its dry and pulverized sodium salt being a yellow powder, dissolv-



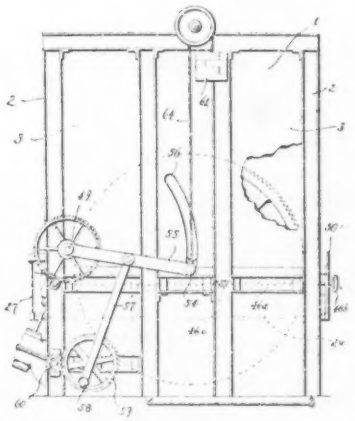
ing in water with a yellow color, the aqueous solution being scarcely altered in color by addition of aqueous ammonia, the dyestuff being precipitated as yellow flakes by the addition of hydrochloric acid, dissolving in concentrated sulphuric acid with a yellow color, and said dyestuff dyeing wool from an acid bath yellow tints fast to light and to acids.

Drive Mechanism for Dyeing Machines

(1,510,667; October 7)

John H. Giles and Donald M. Giles, Philadelphia, Pa

In a dyeing machine provided with a dye vat, in combination, a yarn stick supporting reel mounted on a shaft, pivoted arms supporting said shaft, the head



of said reel having a geared ring concentrically disposed with respect to the said shaft, cranks to throw said arms on their pivots, a gear mounted on one of said pivots and engaging the said gear on said reel, and means to drive said cranks and said first-named gear whereby to shift said reel while rotating it.

FOUR NEW CHROME BROWNS

American Aniline Products, Inc., announces the production of a line of browns similar to Diphenyl Catechines and Diamine Catechines. The four colors announced are: Aminil Chrome Brown GT, Chrome Brown RT, Chrome Brown 2RT and Chrome Dark Brown T. These colors are described as level dyeing and evenly exhausting, and as having good fastness to light, acids and calendering, and are said to be well suited for dyeing cotton yarns, artificial silks, hosiery and cotton piece goods. By after-treating with bichromate of soda or potash and sulphate of copper, the announcement says, excellent fastness-to-light and washing is obtained.

A BOOKLET ON ACETONE

The National Wood Chemical Association has published a 26-page booklet, entitled "Acetone, Its Properties and Uses," by Raymond Frederick Remler. The introduction treats of the history and manufacture of acetone and subsequent sections deal with its physico-chemical and chemical properties and physiological action; acetone as a solvent, as a chemical and in miscellaneous applications; tests of purity, detection and estimation. A bibliography of the literature cited and appendices giving acetone specifications of different governments conclude the booklet. The chapters on the properties and uses of acetone are supplemented with many tables and charts.

The author is a Senior Industrial Fellow of the Mellon Institute of Industrial Research, University of Pittsburgh and research chemist for the National Wood Chemical Association.

SEVEN NEW NEWPORT INSERTS

New sheets containing sample swatch bows showing single Newport colors and giving their properties in detail have been issued for the following colors: Newport Acid Phloxine 6BX Conc., Newport Acid Alizarine Red 3B, Sulphur Brilliant Blue BGL, Sulphur Violet 2R Anthrene Red BN, Anthrene Jade Green and Anthrene Pink FF Paste.

INDIGOSOL O4B

H. A. Metz & Co. are circularizing the trade with an interesting folder which describes Indigosol O4B, a stable indigo compound which is said to be soluble in water and which may be used for the production of bright blue shades. The folder gives formulas for printing paste, thickening for reductions, neutral oxalate of ammonia, padding bath, white resist, red resist and Nitrosamine paste. Five unusually striking sample swatches of resist printed cloth in strong blue and red are attached to the third page of the folder.

R. Norris Shreve, Chairman, Dye Division of American Chemical Society, addressed the graduate students in Chemical Engineering at Columbia University, December 18th, speaking on the subject of the manufacture of beta naphthol.

RAYON ACROSS THE SEA

In a recent news bulletin from the Silk Association of America it is reported that Messrs. Baldwin & Walker of Halifax, England, have withdrawn their application to register the term Rayon as a trade name. This withdrawal is the result of protests from the United States Department of Commerce and several well-known textile associations here.

It is fully expected that the term Rayon will now be adopted in England. The Silk Association of Great Britain and Ireland had approved the adoption of the word and had passed a resolution to the effect that in case the registration of "Rayon" as a trade-mark for cotton, wool and silk goods was not granted they would advise all their members and the public to adopt the word in the same way as has been done in the United States.

NOVO FERMASOL

The Sandoz Chemical Company has issued a small folder dealing with Novo Fermasol, a new stable and highly concentrated diastase product for the textile industry. Its method of application in destarching and the properties of this product are briefly described, as is also its use in compounding finishing and printing pastes. A practical working formula is given for obtaining the best results in the use of this destarching agent.

CORRECTION

Referring to the article on the "Mercerization of Yarn" in the December 1st issue, on page 776, it will be obvious to readers that the strength of sulphuric acid sour will not be 20 to 30 deg. Tw., as printed, but 2 to 3 degrees.

Also in the next to the last paragraph of the article, on page 780, "the ends of threads" should read: "the ends of heads."

DYES AND CHEMICALS WANTED

We buy for spot cash surplus and odd lots of chemicals, oils, dyes, intermediates, solvents, gums, glues, waxes and any item of a chemical nature. Republic Chemical Company, 303 Pearl Street, New York City.

EXPERIENCED HELPER

Young man, graduate in chemistry of the German Polytechnic at Karlsruhe, and having had several months' experience in the application laboratories of Fried. Bayer & Co. at Leverkusen, seeks an opportunity to enter a dyehouse as second hand or helper where he may have an opportunity to familiarize himself with American methods. Address Box 277, American Dyestuff Reporter.

SUPERINTENDENT

Position wanted as superintendent of piece dyeing by man of twenty years' experience on cotton and silk and all classes of cotton piece dyeing. Has had charge of very large plants. Available at once. Address replies to Box 281, American Dyestuff Reporter.

Chrome Yellows

A complete line of Chrome Yellows
Covering a wide range of shades
Adaptable for raw stock and piece goods
To meet the most exacting requirements

Recommended for Silk-White Effects:

KROMEKO YELLOW 3G
(The Greenest Chrome Yellow made)

KROMEKO YELLOW SW
(General commercial type)

KROMEKO YELLOW FF
(Red Shade)

Recommended for Raw-Stock Dyeing:

KROMEKO YELLOW GG
(Medium Shade)

KROMEKO YELLOW CGW

KROMEKO YELLOW CGW 250%
(Strongest and Fastest Chrome Yellow made
Suitable for Vigoreaux Printing)

EXCELLENT RESULTS SECURED WHETHER USED AS SELF COLORS OR FOR SHADING PURPOSES

EXTREMELY FAST TO LIGHT AND FULLING

SAMPLES AND PRICES UPON REQUEST

MANUFACTURED IN AMERICA SOLELY BY

JOHN CAMPBELL & COMPANY
75 Hudson Street, New York, N.Y.
American Dyestuff Manufacturers

BRANCHES.
BOSTON CHICAGO PROVIDENCE CHARLOTTE, N. C.
PHILADELPHIA

"STANDARDS EVERYWHERE"

TEXTILE SPECIALTIES — JACQUES WOLF & Co.

For Textile Processing

ALSATEEN HYDROGUM
Two properly blended compounds of Gum and Hydrosulphite for discharge printing.

SULPHONATED CASTOR OILS

CREAM SOFTENERS

HYDROSULPHITES
for all purposes.

TEXTILE GUMS
Ideal thickeners for printing.

ADHESIVES
for every purpose.

GUMS
Arabic, Tragacanth, Karaya.

MONOPOLE OIL
REG. U.S. PATENT OFFICE
A Special textile oil, highly concentrated and double sulphonated.

JACQUES WOLF & Co.
MANUFACTURING CHEMISTS AND IMPORTERS
PASSAIC, N. J.

Western Representatives:
ANILINE COLOR & CHEMICAL CO.
162 W. Kinzie St., Chicago 590 Howard St., San Francisco

Every Buyer of Dyestuffs Should Own and Use

The 1924 Year Book

of the

American Association of Textile Chemists and Colorists

This volume contains carefully prepared tables of all American-made dyestuffs, grouped both alphabetically and by Schultz numbers. If you know the name of a color you can ascertain its maker and its classification. Under its proper Schultz number you will also find listed all similar competing products. It is a handy and reliable DYESTUFF BUYERS' GUIDE.

This Year Book also contains the Standard Methods of Determining the Fastness of Dyestuffs on Dyed Silk and Wool and Dyed and Printed Cotton. The tests are given for determining the fastness of dyes to laundry and mill washing, fulling, scouring and other agencies for each of these fibers. The methods of making the fastness tests on each kind of fiber for each class of fastness are described fully. The dyes and the washing and fulling formulas used in each test are given.

The book also includes the detailed reports of the Sub-Committees on Fastness to Perspiration and Fastness to Light and of the Research Committee—each of which contains technical material valuable to anyone concerned with the testing and application of dyestuffs.

Copies of this volume may be obtained at $3 per copy from the Secretary of the Association, Walter E. Hadley, 5 Mountain Ave., Maplewood, N. J.

"An educated man is one who knows where to find the information and knowledge he requires for his work."

Books for the Textile Chemist, for the Dyer, the Bleacher, the Dye Chemist

THE APPLICATION OF COAL TAR DYESTUFFS
The Principles Involved and the Methods Employed
By C. B. Whittaker
253 pages **$3.00**

APPLICATION OF DYESTUFFS TO TEXTILES, PAPER, LEATHER AND OTHER MATERIALS
By J. Merritt Matthews, Ph.D.
768 pages, 303 illustrations **$10.00**

THE DYEING OF COTTON FABRICS
275 pages, 44 illustrations **$5.00**

THE DYEING OF WOOLEN FABRICS
243 pages, 33 illustrations **$3.50**
By Franklin Beech

A MANUAL OF DYEING (Revised Seventh Edition)
A Complete Encyclopedia of the Art of Dyeing.
Written from a Practical Standpoint
By E. Knecht, C. Rawson and R. Loewenthal
Two volumes **$15.00**

PRACTICAL TREATISE ON THE BLEACHING OF LINEN AND COTTON YARN AND FABRICS
By L. Tailfer
(Translated from the French)
318 pages **$7.00**

YARN AND WARP SIZING IN ALL ITS BRANCHES
By Karl Kretschmar
(Translated from the German)
192 pages, 122 illustrations **$5.00**

Write for a catalogue of the leading technical books on dyeing, printing, bleaching, finishing, sizing and dye chemistry.

Howes Publishing Company
90 William Street New York City

New York 2-4-6 Cliff St. **Boston** 40 Central St. **Philadelphia** 583 Drexel Bldg.

JOHN D. LEWIS

IMPORTER AND EXPORTER

DYESTUFFS and CHEMICALS

——Manufacturer of——

TANNIC ACID, COMMERCIAL
TANNIC ACID, U. S. P. AD C. P.
TARTAR EMETIC
ANTIMONY SALTS
CRUDE AND HALF REFINED TARTAR
ANTIMONY LACTATE
ACETATE OF CHROME
FLUORIDE OF CHROME
ACETATE OF IRON
NITRATE OF IRON
GALLIC ACID
DYEWOOD EXTRACTS
TANNING EXTRACTS

Jobbers Of
CHEMICALS :: STARCHES :: GUMS

PROVIDENCE, R. I.
Office: 1209 Turks Head Building
Works: Mansfield, Mass.

United States Color & Chemical Company, Inc.

93 Broad St. Boston, Mass.

New York Office: 25 Howard St.

FACTORIES:
NEW ENGLAND ANILINE WORKS, Inc.
Ashland, Mass.

GARFIELD ANILINE WORKS, Inc.
Garfield, N. J.

Index to Advertisers Appearing in This Issue

Althouse Chemical Co. ..... —
American Aniline Products, Inc. ..... —
American British Chemical Supplies, Inc. ..... —
American Dyewood Co. V
American Laundry Machinery Co. ..... —
Arkansas Co. IV
Arnold, Hoffman & Co. ..... —
Atlas Electric Devices Co. ..... —

Bosson & Lane IV
Buffalo Housewrecking & Salvage Co. X

Calco Chemical Co. XIV
Campbell, John, & Co. XV
Ciba Co. VII

David, S. R., & Co. IV
Day, Joseph P. VIII
Dunker & Perkins Co. IV
Du Pont de Nemours, E. I., & Co. ..... —
Dye Products & Chemical Co. ..... —
Dyer & Calico Printer ..... —

Fleischmann Co. VI
Fletcher Works IX
Fortner, L. B., & Co. ..... —
Foster, Edward C. ..... —
Franklin Process Co. ..... —

Geigy Co., Inc. ..... —
Grasselli Dyestuff Corp. ..... —

Hussong Dyeing Machine Co. IX

Innis, Speiden & Co. ..... —
International Nickel Co. ..... XI, XII
International Salt Co. XVIII

Jennings & Co. XVIII

Klauder-Weldon Dyeing Machine Co. IX
Klipstein, A., & Co. ..... Back Cover

Lewis, John D. XVII

Malt-Diastase Co. VI
Mathieson Alkali Works ..... Second Cover
Metz, H. A., & Co. ..... —

National Aniline & Chemical Co. XIII
New Brunswick Chemical Co. III
Newport Chemical Works ..... Front Cover

Roessler & Hasslacher ..... —
Rohm & Haas Co. X

Sandoz Chemical Works VII
Society of Dyers and Colourists ..... Third Cover

Tagliabue, C. J., Mfg. Co. IX

United Chemical Products, Inc. VIII
U. S. Color & Chemical Co. XVII

Wolf, Jacques, & Co. XV

Zinsser & Co. X

Commerce once drew its salt from the oceans—now International Salt supplies the demand of industry for a pure product.

Because purity is its basic quality International Salt has made an enviable record of satisfaction. Users know that International Salt can be depended upon for unvarying performance.

You can settle the important question of what salt to use by testing International Salt in your own processes. It will establish a record for results in your plant—just as it has for other leaders in the industries.

INTERNATIONAL SALT CO., INC.
SCRANTON, PENNSYLVANIA
NEW YORK OFFICE, 2 RECTOR ST.

JENNINGS & COMPANY, Inc.
93 Broad Street Boston, Mass.

Every delivery of our Colors is guaranteed equal to standard. No shipment leaves our warehouses without closest scrutiny.

Our experts in the dyeing of leather and textiles are at the call of Manufacturers and Finishers. No charge is made for their time and experience.

The dyeing problem is complex. The cost of dyeing per unit of material is only one factor in the problem of successful merchandising. The effectiveness of that dyeing—its success in meeting trade conditions—is a factor even more important.

We are equipped to render a service unexcelled by any American distributor of dyestuffs by giving counsel and aid to accomplish best results in the dyehouse.

Let us render you this service

American Dyestuff Reporter

Index to Volume XIII

January 14, 1924, to December 29, 1924, Inclusive

Indexed by Subjects and Authors

INDEX BY SUBJECTS

Subject Page

Acetate Silk: Bleaching, Dyeing and Finishing of (Little) 5
Acid in Cotton Goods (Goldthwait) 419
Action of Acids on Cotton: The (Hall) 529
Action of Light on Dyes Applied to Cotton Fabrics: The—A Summary of the Literature (Cunliffe):
Part I 428
Part II 460
Part III 489
Active Acidity and Alkalinity—What Are They and How Are They Measured? (Chapin) 759
Alexander Visits America: Sir William 832
American Association of Textile Chemists and Colorists
[See under "Proceedings"]
American Chemical Society: Abstracts of Papers Delivered Before the Dye Division of the 290, 620
American Chemical Society: Fall Meeting of the 482, 560
Amount and Type of Research an Effective Dyehouse System May Include: The (Busby) 317
Analysis of Sizing Materials (Sokolinski) 64
Application of Chromium Compounds in Dyeing (Durfee) 226
Application of Colloidal Chemistry to Textile Problems: The (Claflin) 541
Application of Vat Dyes to Wool: The (Mullin) 809
Arghan Fiber: The (Becke) 107
Art in Textiles: How the Increasing Demand for, Affects Color-Process Departments (Busby) 453
Artificial Light as a Testing Standard for Determining Fastness to Light: The Discussion of Three Forms of (Thayer) 136
Artificial Silk and Wool Hosiery (Hayes) 213
Available Trade Lists Distributed by the Department of Commerce 204
Azo Dyestuffs: Benzene in Its Relation to the (Nelson) 392
Azo Dyestuffs: The Part Which Naphthalene Plays in the (Nelson) 485

Bleaching and Dyeing of Cotton Goods by the Thies Method: The (Schmidt) 708
Bleaching, Dyeing and Finishing of Acetate Silk (Little) 5
Bleaching of Cotton Piece Goooods (Deady):
Part I 1
Part II 43
Bleaching of Paper-Making Fibers: The (Sutermeister):
Part I 185
Part II 216
Bleaching, Peroxide (Ainslie) 868
Blue: Dyeing Cotton Piece Goods with Hydron (Ginsberg) 119
Building of a Dye Industry: The (Van Riper) 367

Carbonization of Wool Materials: The (Ginsberg) 577
Cause of Fuzziness in Silk Dyeing: The 445
Causes of Variation in Shade of Colored Paper (Mann) 85
Celanese: The Dyeing of (Platt) 255
Cellulose Acetate Silk: The Dyeing of (Lawrie) 593
Cellulose Acetate Silk: The Dyeing of (Davies) 753
Cellulose Chemistry: Developments in and Their Application to the Textile Industry (Hibbert) 219
Centralization of Quality-Color Activities of an Entire Textile Business: The (Busby) 385
Census of Dyes and Organic Chemicals: Preliminary Report of the 313
Chemical Analysis in the Study of Cotton (Cantwell) 671
Chemical Foundation Suit: Government Files New Brief in 641
Chemistry—An Aid to the Knitter 209
Chemistry Applied to Hawick Staple Industries 604
Chemistry of Cotton Cloth Finishing: (Warner) 281
Chrome Dyestuffs: Dyeing of Textile Fabrics with (Ginsberg) 284
Chromium Compounds in Dyeing: The Application of (Durfee) 226
College Men in the Bleachery (Alling) 77
"Colloidal Solubilization" or "Dispersion" of Insoluble Coloring Matters: Dyeing by—The S. R. A. Colors (Ellis) 712
Color Measurement (Jones) 121
Color: The Psychology of (Griffin) 443
Coloring of Paper: The (Clark) 149
Colors: The New Science of (Ostwald):
Part I 609
Part II (Conclusion) 640
Conditioning of Wool: The (Rauer) 322
CORRESPONDENCE:
Co-operative Textile Research 333
Continuous Dyeing Machine 590
The Nicol Prism 792, 882
Cotton: Chemical Analysis in the Study of (Cantwell) 671
Cotton Cloth Finishing: The Chemistry of (Warner) 281
Cotton Fabrics: The Action of Light on Dyes Applied to—A Summary of the Literature (Cunliffe)
[See under "Action"]
Cotton Fabrics: The Singeing of (Travis) 510
Cotton Goods: Acid in (Goldthwait) 419
Cotton Goods Printing: The Use of Katanol in (Fischer) 423
Cotton Piece Goods: Bleaching of (Deady):
Part I 1
Part II 43
Cotton Piece Goods: Dyeing with Hydron Blue 119
Cotton Piece Goods: Dycing and Finishing (Travis) 421
Cotton Processing: Water Softening and Purification in (Adams) 718
Cotton: The Action of Acids on (Hall) 529

Detergents for Textile Finishing: Prepared (Tonn) 166
Deterioration of Wool Due to Atmospheric Causes: The (Heermann) 616
Developing Indanthrene Blue (Pokorny) 247
Developments in Cellulose Chemistry and Their Practical Application to the Textile Industry (Hibbert) 219
Discussion of Three Forms of Artificial Light as a Testing Standard for Determining Fastness to Light (Thayer) 136
Doubling Figures: An Index to Present Conditions 833
Do We Need German Dyes? Value of Chemical Tests in Buying (Olney) 351
Dr. Herty Reviews Dye Progress 657
Dress Linens: Their Production and Finish (Moore) 85
Dye Application in China (Woo Dong Chi):
Part I 741
Part II 815
Part III 876

Dyehouse Design (Benoit) 360
Dyehouse Practice: Simplification in, Through More Rigid Control of All Elements (Busby) 205
Dye Industry: The Building of a (Van Riper) 367
Dyeing and Finishing Cotton Piece Goods (Travis) 421
Dyeing and Its Problems: Hosiery (Spurgeon) 88
Dyeing by "Colloidal Solubilization" or "Dispersion" of Insoluble Coloring Matters—The S. R. A. Colors (Ellis) 712
Dyeing Cotton Piece Goods with Hydron Blue 119
Dyeing Felt Hats (Grove-Palmer) 829
Dyeing Machines: Hosiery (Drum) 90
Dyeing of Celanese: The (Platt) 255
Dyeing of Cellulose Acetate Silk: The (Lawrie) 593
Dyeing of Cellulose Acetate Silk: The (Davies) 753
Dyeing of Cotton Goods by the Thies Method: The Bleaching and (Schmidt) 708
Dyeing of Hosiery: The (Killheffer) 245
Dyeing of Ladies' Dress Fabrics: Preparation and (Matos):
Part I 447
Part II 463
Dyeing of Textile Fabrics with Chrome Dyestuff (Ginsberg) 284
Dyeing of Vat Colors: Use of Hydrogen Gas in the (Warshaw) 163
DYEING PROBLEMS:
Spots on Para Red 413
Scrooping of Mercerized Cotton 483
Dyeing Sulphur Colors on Silk (Rose) 49
Dyeing: The Science of (Herrmann) 820
Dyer: Relationship of the Modern to the Ancient Colorist (Crawford) 144
Dyes for Production of Recurrent Colors: Selection and Control of Most Suitable (Busby) 113
Dyes Imported
[See "Foreign"]
Dyestuff Laboratory and the Mill—Past Experience: The (Clarkson) 818
DYESTUFF TABLES—153, 195, 237, 274, 302, 326, 374, 404, 440, 476, 500, 534, 566, 602, 630, 658, 696, 730, 768, 805, 838, 880

EDITORIALS:
The Chemical Foundation Decision 25
Commercial Bribery 27
Creative Progress 69
Commercial Optimism 69
The Tariff 69
Woodrow Wilson 97
Reported Anglo-German Dye Agreement 98
Completing a College Education 99
A Praiseworthy Movement 133
Hard Facts, and the Proposed Anglo-German Dye Alliance 171
Trial and Error 173
The Garvan Dinner 193
The Coming Boom in Textiles 193
Co-operative Textile Research 231
Removal Notice 265
Sir William Alexander's Resignation 265
Technical Control of Chemical Processes 266
The Dyestuff Export Market 299
Ground for Optimism 333
The British Dyestuffs—I. G. Negotiations 371
Tariff Views Misinterpreted 401
Common Sense from the Cotton Belt 401
"Rayon" 401
The Dyestuff Industry's Future—A Matter of Policy 435
Surprising Dye Progress 471
D-13—Exponent of Preparedness 471
A Tangible Result 495
The Magic of the Word "Imported" 495
The Japanese Dye Embargo 521
Simplifying the Tariff 521
The Laboratory a Partner in Advertising 557
Foreign Dye Fastness May Need to Be Proved 558
The Fable of the Fast Dye 587
A Passed Dividend and a Question Mark 588
Will Hand to Mouth Prevail? 588
Optimism Plus Figures 625
Dyes as a Business Barometer 651
Guaranteed Fastness 651
Co-operation vs. Competition 694
Are You a Ballot-Slacker? 694
More Anent Competitive Conditions in the Dyestuff Manufacturing Field 721
The Second Round 722
The Blindness of Justice 767
The Election and Business 767
Shifting Orders: The Dyestuff Manufacturer's Opportunity 791
Color Trade Journal Changes Hands 831
Co-operate for Profit and Protection 831
Two Dates and a Retrospection 873
The Achievement of the Impossible 873
Elimination of Variables in the Dyeing Method of Testing Dyes: The (Appel) 507
Emulsions in the Textile Industry (Lindner) 212, 252

Factors Which Affect the Stability of Hydrosulphite Discharge Pastes, With Suggestions for Improvement (Hollander) 62
Facts and Theories Concerning Regain Propositions in Textile Materials (Hartshorne) 37
Fast Dye and Unshrinkable Linens 576
Fastness to Light: Testing Colors for (Flynn) 155
Fastness to Light: The Discussion of Three Forms of Artificial Light as a Testing Standard for Determining (Thayer) 136
Fastness to Perspiration: Report of the Sub-Committee on (A. A. T. C. C.) 15
Felt Hats: Dyeing (Grove-Palmer) 829
Finishers' Troubles in the Textile Industry—Heating of Calenders (Travis) 628
Finishing: Prepared Detergents for Textile (Tonn) 166
Finishing: The Chemistry of Cotton Cloth (Warner) 281
Foreign Dyes Imported Through the Port of New York:
January 138
February 176

Subject — Page

March ... 267
April ... 340
May ... 407
June ... 466
July ... 537
August ... 621
September ... 723
October ... 784
Franklin Process Display at the Better Fabrics Exhibition ... 181
Fulling: Soaps and Alkalies in (Davidson) ... 650
Fuzziness in Silk Dyeing: The Cause of ... 445

Garvan Dinner: The ... 304
German-American Commerce Board Established ... 335

Herty Addresses Franklin Institute ... 71
Hoppin Addresses Synthetic Organic Chemical Manufacturers' Association ... 29
Hosiery: Artificial Silk and Wool (Hayes) ... 213
Hosiery Dyer: The Journal of a [See "Journal"]
Hosiery Dyeing and Its Problems (Spurgeon) ... 88
Hosiery: The Dyeing of (Killheffer) ... 245
Hosiery Dyeing Machines (Drum) ... 90
How the Increasing Demand for Art in Textiles Affects Color-Process Departments (Busby) ... 453
Hydrosulphite Discharge Pastes: Factors Which Affect the Stability of, With Suggestions for Improvement (Hollander) ... 62
Hydrosulphites and Sulphoxalates: Stripping Hosiery with (Thompson) ... 368

Importance of Soft Water in Wool Processing: The (Culver) ... 717
Indanthrene Blue, Developing (Pokorny) ... 247
Indigo: The Story of ... 310
Indigoid Vat Colors Discharged with Hydrosulphites (Wuth) ... 695
Influence of Dispersion on Vat Dyeing (Wuth) ... 291

INQUIRY DEPARTMENT:
Epsom Salts with Sulphur Black ... 135
Mineral Stains ... 135
Resist with Use of Sulphur Blue ... 135
Back Filled Medium Sheetings ... 301
Cut Mark Ink ... 449
Fuzziness in Silk Dyeing ... 449
Dyeing Artificial Silk ... 449
Sodium Peroxide in Silk Bleaching ... 483
Dyeing Chrome Black on Wool ... 483
Dyeing Heavy Duck Canvas ... 483
Scouring Woolens ... 523
Fast Dye for Coloring Oils ... 523
Dyestuff for Rubber ... 523
Brown Spots on Bleached Cotton ... 523
Silk Lousiness in Dyeing ... 833
Duck Dyed Brown ... 834
Vat Dyes—Their Classification ... 834
Dyeing Leather for Handbags ... 834
Chiffon with Curled Edges ... 835

Journal of a Hosiery Dyer: The (S. P. R.) ... 356, 406, 442, 480, 502, 533

Katanol in Cotton Goods Printing: The Use of (Fischer) ... 423
Kiers: Their Relation to Cotton Finishing (Jefferson) ... 787
Knitting Arts Exhibition: Interesting Exhibits to Be Featured at the ... 200

Light as a Testing Standard for Determining Fastness to Light: Discussion of Three Forms of Artificial (Thayer) ... 136
Light Fastness: Preliminary Report of the Sub-Committee on (A. A. T. C. C.) ... 10
Light on Dyes Applied to Cotton Fabrics: The Action of—A Summary of the Literature (Cunliffe) [See under "Action"]
Lowell Textile School Graduation ... 437

Making of Colored Papers: The (Griffin) ... 116
Manufacturers of Dyestuffs and Intermediates During the World War (Branegan) ... 464
MEN OF MARK IN THE DYESTUFF INDUSTRY:
Harry R. Davies ... 693
Harrison F. Wilmot ... 830
Mercerization—A Textile Romance (Goldthwait) ... 612
Mercerizing Cotton Goods in the Piece (Deady) ... 663
Mercerizing: The Cotton Fiber and Its Luster (Goldthwait) ... 643
Mercerizing: Modern Research and Its Results (Goldthwait):
Part I ... 667
Part II ... 705
Mercerization of Yarn: The (Goldthwait) ... 775
Metz Returns from Europe ... 403
Microbiological Injury to Fibers and Fabrics (Mullin) ... 580
Modern Wool Washing (Pospiech) ... 517
Monel Metal for Dyeing, Bleaching and Finishing Equipment (McKay and Turner) ... 54
Mordants and Alumina: The Theory of (Nelson) ... 732
More Statistics ... 108

Naphthalene Plays in the Azo Dyestuffs: The Part Which (Nelson) ... 485
Naphthol AS: New Developments in the Use of (Rath) ... 581
New Science of Colors: The (Ostwald):
Part I ... 609
Part II (Conclusion) ... 646
Nicol Prism: Seeing Colors Through a (Durfee) ... 575
Nomenclature of Dyestuffs, The (French) ... 875

Oils: Sulphonated (Brown) ... 357
One-Pound Franklin as a Raw Stock Machine: The (Holton) ... 568

Paper: Causes of Variation in Shade of Colored (Mann) ... 35
Paper-Making Fibers: The Bleaching of (Sutermeister):
Part I ... 185
Part II ... 216
Paper: The Coloring of (Clark) ... 149
Paper with Rosin?: What Do We Know About Sizing (Sutermeister) ... 513
Papers: The Making of Colored (Griffin) ... 116
Paper: The Use of Soda Ash in the Beater Coloring of (Holmes) ... 561
Part Which Naphthalene Plays in the Azo Dyestuffs: The (Nelson) ... 485

Subject — Page

PATENTS:
Dyestuff Prepared from Orthoxylylaldehyde ... 31
Process of Making 2-3 Oxy-Naphtholic Acid ... 32
Felt Treating Machine ... 109
Blue Sulphur Dye ... 109
Formaldehyde Condensation Products: Manufacture of ... 109
Diazo Coloring Matter ... 110
Rotary Perforated Beam Apparatus ... 110
Hydrosulphites: Apparatus for Making ... 110
Process and Device for Finishing Textile Fabrics ... 110
Summary for 1923 ... 147
Fabric Printing Machine ... 183
Preparation of Liquid Bleach Solutions ... 183
Machine for Fluffing Fibers ... 183
Apparatus and Method of Testing Silk Threads ... 183
Apparatus for Impregnating Fabrics with a Mercerizing or Other Liquid ... 184
Method of Making Water Softening Material ... 184
Vomiting Kier ... 201
Dye and Process of Making Same ... 201
Dyeing Machine ... 202
Process of Preparing Triphenylmethane Dyes ... 202
Dyeing and Printing Acetyle Silk and Materials Containing It ... 202
Hosiery Drying and Shaping Structure ... 202
Mercerization and Finishing of Textile Fabrics ... 240
Dye Solution and Process for Making and Using Same ... 240
Dyestuffs Capable of Being Chromed ... 240
Dyeing Machine ... 240
Process of Dyeing Cloth with Fast Colors ... 240
Process of Dyeing Raw Silk ... 240
Yarn-Dyeing Device ... 241
Yarn-Dyeing Machine ... 241
Washing Process and Machine ... 241
Method of Finishing ... 241
Dyestuffs Containing Chromium ... 348
Dyeing of Cellulose Acetate Silk ... 348
Process for Washing and Degumming ... 348
Liquid Mixer ... 348
Dyestuff ... 348
Apparatus for Drying Piece Goods ... 349
Anthracene Dye ... 349
Moistening Device ... 349
Process of Mordanting and Dyeing Wool ... 377
Dyeing Machine ... 378
Apparatus for Printing Yarns ... 378
Detergent ... 378
Dyeing Machine ... 378
Drying Machine ... 450
Apparatus for Textile Dyeing ... 450
Process and Apparatus for Treating Textile Materials ... 451
Colorimeter ... 451
Apparatus for Mixing Liquids ... 481
Preparation of Dyestuffs Consisting in Treating Decacyclene ... 481
Washing and Drying Machine ... 81
Dyeing Silk Piece Goods ... 481
Machine for Lixiviating Textiles ... 574
Tetrakisazo Dyes ... 574
Manufacture of Vat Dyes ... 574
Mixing Liquids ... 606
Dyeing Acetyl Cellulose ... 606
Bleaching Fibrous Material ... 606
Spot-Dyeing Process ... 606
Waterproofing for Cloth ... 607
Softening Water ... 607
Recovering Laundry Material ... 607
Azo Dyestuffs ... 607
Instrument for the Automatic Determination of Moisture ... 739
Dyestuff ... 739
Apparatus for Treating Fibers ... 739
Machine for Dyeing ... 739
Drier ... 883
Fur-Cleaning Process ... 883
Pyrazolone Dye ... 883
Drive Mechanism ... 883
Penetrometer and Its Importance in Determining the Water Resistance of Fabrics (Wosnessensky) ... 781
Peroxide Bleaching (Ainslie) ... 868
Photochemical Decomposition of Oxalic Acid in the Presence of Uranium Salts: The (Holmes) ... 188
Potash—Twin to Caustic Soda ... 586
Practical Hints on the Production of Bright Colors on Textile Fabrics (Sansone):
Part I ... 101
Part II ... 218
Part III ... 276
Part IV ... 328
Part V ... 524
Part VI ... 564
Part VII ... 653
Part VIII ... 797
Preparation and Dyeing of Ladies' Dress Fabrics (Matos):
Part I ... 447
Part II ... 463
Prepared Detergents for Textile Finishing (Tonn) ... 166
Primuline and Vat Colors for the Production of Fast Khaki Shades (Unterweiser) ... 160
Printing: The Use of Katanol in Cotton Goods (Fischer) ... 423
PROCEEDINGS OF THE AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS—5, 45, 87, 121, 155, 189, 219, 253, 291, 331, 359, 397, 431, 469, 553, 673, 717, 743, 784, 817, 849.
Psychology of Color: The (Griffin) ... 443

Regain Propositions in Textile Materials: Facts and Theories Concerning (Hartshorne) ... 37
Relationship of the Modern Dyer to the Ancient Colorist (Crawford) ... 144
REVIEWS:
Textile Fibers ... 403
Farbstofftabellen ... 449
Waterproofing Textile Fabrics ... 506
The 1923 Dye Census ... 590
The Colour Index ... 591
1924 Year Book of the National Association of Cotton Manufacturers 626

Subject — Page

REVIEWS—(*Continued*):
Manual of Standard Practice for the Power-Laundry Washroom 626
Chemistry in Industry 794
Performance Tests of a Liquid Laundry Soap 795
Three Textile Raw Materials 795
Ripening of Viscose—Its Industrial Control: The (Frere) 545

Science of Dyeing: The (Herrmann) 820
Scientific Washing (Guernsey):
Part VII—Bleach 249, 287, 325
Part VIII—Water: Its Use in Textile Washing 518
Scouring and Carbonizing: Wool (Levering) 253
Scouring: Steam in 108
Seeing Colors Through a Nicol Prism (Durfee) 575
Selection and Control of Most Suitable Dyes for Production of Recurrent Colors (Busby) 113
Silk Dyeing: The Cause of Fuzziness in 445
Silk and Wool Hosiery: Artificial (Hayes) 213
Silk: Dyeing Sulphur Colors on (Rose) 49
Silk Testing: Course in Methods of 494
Simplified Method of Resist Dyeing 700
Simplification in Dyehouse Practice Through More Rigid Control of All Elements (Busby) 205
Singeing of Cotton Fabrics: The (Travis) 510
Sir William Alexander Visits America 832
Sizing Materials: Analysis of (Sokolinski) 64
Sizing Paper with Rosin?: What Do We Know About (Sutermeister) 513
Soaps and Alkalies in Fulling (Davidson) 656
S. O. C. M. A., Annual Meeting of the 843
S. O. C. M. A.: Summer Outing of the 438
S. O. C. M. A.: Hoppin Addresses the 29
Southern Textile Show: The 649
S. R. A. Colors: Dyeing by "Colloidal Solubilization" or "Dispersion" of Insoluble Coloring Matters—The (Ellis) 712
Standards for the Testing of Dyes and Dyed Fabrics 297
Steam in Scouring 108
Stripping Hosiery with Hydrosulphites and Sulphoxalates (Thompson) 368
Substantive Action of the Naphthols of the "AS" Series (Guertler) 81
Sulphonated Oils (Brown) 357

Tariff Provisions Affecting Coal-Tar Chemicals: Court Upholds 478
T. C.'s COLUMN:
The Co-operative Clearing House 28
A Hackneyed Subject—Research 70
The Don't-Believes and the Bashful Brothers 99
The Young Chemists' Page 134
Trade Paper and Technical Authority 174
The Technical Dye Salesman 194
Dyestuff Samples—Uses and Abuses 232
Dye Makers' Policies 266
The Shade Card 300
The Modern Babel 334
Why the Gap Between Chemist and Dyer?—The Chemist 372
Why the Gap Between Chemist and Dyer?—The Dyer 402
Respect for the Chemist 436
The Business Man Who Hires Chemists 472
The "T. C." a Physical Chemist 496
The "T. C." an Executive 522
The "T. C." a Jack-of-All-Trades 558
Let the Chemist Grow 589
TECHNICAL NOTES FROM FOREIGN SOURCES—100, 143, 180, 239, 273, 312, 347, 376, 412, 446, 475, 503, 536, 572, 605, 639, 660, 701, 737, 772, 804, 840
Testing Colors for Fastness to Light (Flynn) 155
Testing Dyes: The Elimination of Variables in the Dyeing Method of (Appel) 507
Testing of Dyes and Dyed Fabrics: Standards for the 297
Textile Finishing: Prepared Detergents for (Tonn) 166
Textile Manufacturer, Retailer and Consumer (Steed) 431
Textile Wastes and Stream Pollution (Besselievre) 743
Theory of Mordants and Alumina: The (Nelson) 732
Thies Method: The Bleaching and Dyeing of Cotton Goods by the (Schmidt) 708
THINGS EVERY TEXTILE CHEMIST AND COLORIST SHOULD KNOW:
No. 10—A Brief Resume of Chlorine Bleaching 478
No. 11—The Classes of Vegetable Fibers 585
No. 12—To Tell the Common Fibers Apart 619
No. 13—Silk Testing 652
No. 14—Water and Its Treatment 698
Treatment of Waste Waters from Dyeing Processes: The (Brown) 569
Two Important Tariff Decisions 30

U. S. Firms Adopt Fast Dye Brands as Tariff Drops 560
Use of Hydrogen Gas in the Dyeing of Vat Colors (Warshaw) 163
Use of Katanol in Cotton Goods Printing: The (Fischer) 423
Use of Soda Ash in the Beater Coloring of Paper: The (Holmes) 561

Value of Chemical Tests in Buying (Olney) 351
Vat Colors: Addenda on (Jaeck) 66
Vat Colors Discharged with Hydrosulphites: Indigoid (Wuth) 695
Vat Colors for the Production of Fast Khaki Shades: Primuline and (Unterweiser) 160
Vat Colors: Use of Hydrogen Gas in the Dyeing of Vat Colors (Warshaw) 163
Vat Dyeing: Influence of Dispersion on (Wuth) 291
Vat Dyes: Their Properties and Various Phases of Application (Hannah) 20
Vat Dyes to Wool: The Application of (Mullin) 20
Vegetable Matters Used in Dyeing Cotton Goods (Nelson):
Part I 597
Part II 632

Washing: Scientific (Guernsey):
Part VII—Bleach 249, 287, 325
Part VIII—Water: Its Use in Textile Washing 518
Waste Waters from Dyeing Processes: The Treatment of (Brown) 569
Wastes and Stream Pollution: Textile (Besselievre) 743
Water and Its Relation to the Textile Industry (Tiger) 673
Water in Wool Processing: The Important of Soft (Culver) 717
Water Resistance of Fabrics: The Penetrometer and Its Importance in Determining the (Wosnessensky) 781
Water Softening and Purification in Cotton Processing (Adams) 718
Weighting and Dyeing of Silk: The (Abstract) 763
What Do We Know About Sizing Paper with Rosin? (Sutermeister):
Part I 513
Part II 545
Wool: Deterioration of, Due to Atmospheric Causes (Heermann) 616
Wool Materials: The Carbonization of (Ginsberg) 577
Wool: The Conditioning of (Rauer) 322
Wool Scouring and Carbonizing (Levering) 253
Wool Washing: Modern (Pospiech) 517

Yarn: The Mercerization of (Goldthwait) 775
Your Technical Library 381, 415

AUTHORS' INDEX

Author — Page

ADAMS, CARLETON C.—
Water Softening and Purification in Cotton Processing 718
AINSLIE, THOMAS D.—
Peroxide Bleaching 868
ALLING, M. W.—
College Men in the Bleachery 77
APPEL, WILLIAM D.—
The Elimination of Variables in the Dyeing Method of Testing Dyes 507
BECKE, MAX—
The Arghan Fiber 107
BENOIT, A. W.—
Dyehouse Design 360
BESSELIEVRE, E. B.—
Textile Wastes and Stream Pollution 743
BRANEGAN, JAMES A.—
Manufacturers of Dyestuffs and Intermediates During the World War 464
BROWN, S. N.—
Sulphonated Oils 357
The Treatment of Waste Waters from Dyeing Processes 569
BUSBY, HIBBARD S.—
The Selection and Control of Most Suitable Dyes for Production of Recurrent Colors 113
Simplification in Dyehouse Practice Through More Rigid Control of All Elements 205
The Amount and Type of Research an Effective Dyehouse System May Include 317
The Centralization of Quality-Color Activities of an Entire Textile Business 385
How the Increasing Demand for Art in Textiles Affects Color Process Departments 453
CANTWELL, THOMAS—
Chemical Analysis in the Study of Cotton 671
CHAPIN, DR. H. C.—
Active Acidity and Alkalinity—What Are They and How Are They Measured? 759
CHI, WOO DONG—
Dye Application in China:
Part I 741
Part II 815
Part III 876

Author — Page

CLAFLIN, ALAN A.—
The Application of Colloidal Chemistry to Textile Problems 541
CLARK, NORMAN—
The Coloring of Paper 149
CLARKSON, PHILIP S.—
The Dyestuff Laboratory and the Mill—Past Experience 818
CRAWFORD, M. D. C.—
Relationship of the Modern Dyer to the Ancient Colorist 144
CULVER, JOHN H.—
The Importance of Soft Water in Wool Processing 717
CUNLIFFE, PERCY WALMSLEY—
The Action of Light on Dyes Applied to Cotton Fabrics:
Part I 428
Part II 463
Part III 489
DAVIDSON, A. W.—
Soaps and Alkalies in Fulling 650
DAVIES, HARRY R.—
The Dyeing of Cellulose Acetate Silk 753
DEADY, WILLIAM F.—
Bleaching Cotton Piece Goods:
Part I 1
Part II 43
Mercerizing Cotton Goods in the Piece 663
DRUM, HARRY S.—
Hosiery Dyeing Machines 90
DURFEE, WALTER C.—
Seeing Colors Through a Nicol Prism 575
DURFEE, WINTHROP C.—
The Application of Chromium Compounds in Dyeing 226
ELLIS, G. HOLLAND—
Dyeing by "Colloidal Solubilization" or "Dispersion" of Insoluble Coloring Matters—The S. R. A. Colors 712
FISCHER, DR. RICHARD—
The Use of Katanol in Cotton Goods Printing 423
FLYNN, OSCAR R.—
Testing Colors for Fastness to Light 155
FRENCH, R. W.—
The Nomenclature of Dyestuffs 875

23118

Author	Page
FRERE, J.—	
The Ripening of Viscose—Its Industrial Control	545
FRIES, BRIGADIER-GENERAL AMOS A.—	
Chemistry and National Defense	304
GINSBERG, ISMAR—	
Dyeing of Textile Fabrics with Chrome Dyestuffs	284
The Carbonization of Wool Materials	577
GOLDTHWAIT, CHARLES F.—	
Acid in Cotton Goods	419
Mercerization—A Textile Romance	612
Mercerizing: The Cotton Fiber and Its Luster	643
Mercerizing: Modern Research and Its Results:	
Part I	667
Part II	705
The Mercerization of Yarn	775
GRIFFIN, MARTIN L.—	
The Making of Colored Papers	116
The Psychology of Color	443
GROVE-PALMER, FREDERICK—	
Dyeing Felt Hats	829
GUERNSEY, F. H.—	
Scientific Washing:	
Part VII—Bleach	249, 287, 325
Part VIII—Water: Its Use in Textile Washing	518
GUERTLER, DR. H.—	
Substantive Action of the Naphthols of the "AS" Series	81
HALL, A. J.—	
The Action of Acids on Cotton	529
HANNAH, GEORGE K., JR.—	
Vat Dyes: Their Properties and Various Phases of Their Application	20
HARTSHORNE, WILLIAM D.—	
Facts and Theories Concerning Regain Propositions in Textile Materials	37
HAYES, LOUIS G.—	
Artificial Silk and Wool Hosiery	213
HEERMANN, DR. P.—	
Deterioration of Wool Due to Atmospheric Causes	616
HERRMANN, HENRY F.—	
The Science of Dyeing	820
HIBBERT, DR. HAROLD—	
Developments in Cellulose Chemistry and Their Application to the Textile Industry	219
HOLLANDER, CHARLES S.—	
Factors Which Affect the Stability of Hydrosulphite Discharge Pastes, with Suggestions for Improvement	62
HOLMES, WALTER C.—	
The Photochemical Decomposition of Oxalic Acid in the Presence of Uranium Salts	188
The Use of Soda Ash in the Beater Coloring of Paper	561
HOLTEN, JOHN H.—	
The One-Pound Franklin as a Raw Stock Machine	568
JAECK, J. P.—	
Addenda on Vat Colors	66
JEFFERSON, R. C.—	
Kiers: Their Relation to Cotton Finishing	787
JONES, Loyd A.—	
Color Measurement	121
KILLHEFFER, E. H.—	
The Dyeing of Hosiery	245
LAWRIE, L. G.—	
The Dyeing of Cellulose Acetate Silk	593
LEVERING, J. WALTER—	
Wool Scouring and Carbonizing	253
LINDNER, DR. KURT—	
Emulsions in the Textile Industry	212, 252
LITTLE, ROYAL D.—	
Bleaching, Dyeing and Finishing of Acetate Silk	5
MANN, LEONARD—	
Causes of Variation in Shade of Colored Paper	35
MATOS, LOUIS J.—	
Preparation and Dyeing of Ladies' Dress Fabrics:	
Part I	447
Part II	463
McKAY, R. J. (in collaboration with E. A. TURNER)—	
Monel Metal for Bleaching, Dyeing and Finishing Equipment	54
MOORE, ALFRED S.—	
Dress Linens: Their Production and Finish	85
MULLIN, CHARLES E.—	
The Application of Vat Dyes to Wool	809
Microbiological Injury to Fibers and Fabrics	580

Author	Page
NELSON, W. B.—	
Benzene in Its Relation to the Azo Dyestuffs	392
The Part Which Napthalene Plays in the Azo Dyestuffs	485
Vegetable Matters Used in Dyeing Cotton Goods:	
Part I	597
Part II	632
The Theory of Mordants and Alumina	732
OLNEY, PROF. LOUIS A.—	
Do We Need German Dyes? Value of Chemical Tests in Buying	351
OSTWALD, WILHELM—	
The New Science of Colors:	
Part I	609
Part II (Conclusion)	646
PLATT, HERBERT—	
The Dyeing of Celanese	255
POKORNY, S.—	
Developing Indanthrene Blue	247
RATH, DR. S—	
New Developments in the Use of Naphthol AS	581
RAUER, PAUL—	
The Conditioning of Wool	322
ROSE, ROBERT E.—	
Dyeing Sulphur Colors on Silk	49
SANSONE, RAFFAELE—	
Practical Hints on the Production of Bright Colors on Textile Fabrics:	
Part I	101
Part II	218
Part III	276
Part IV	328
Part V	524
Part VI	564
Part VII	653
Part VIII	797
SCHMIDT, EUGENE—	
The Bleaching and Dyeing of Cotton Goods by the Thies Method	708
SOKOLINSKI, J. J.—	
Analysis of Sizing Materials	64
SPENCE, G. K—	
Affinity of Basic Dyes for Bleached Sulphite Fibers	345
S. P. R.—	
The Journal of a Hosiery Dyer	366, 406, 442, 480, 502, 533
SPURGEON, RICHARD C.—	
Hosiery Dyeing and Its Problems	88
STEED, RICHARD E.—	
Textile Manufacturer, Retailer and Consumer	431
SUTERMEISTER, E.—	
The Bleaching of Paper-Making Fibers:	
Part I	185
Part II	216
What Do We Know About Sizing Paper with Rosin?:	
Part I	513
Part II	548
THAYER, HENRY SPAFFORD, B. SC.—	
The Discussion of Three Forms of Artificial Light as a Testing Standard for Determining Fastness to Light	136
THOMPSON, A. R.—	
Stripping Hosiery with Hydrosulphites and Sulphoxalates	368
TIGER, HOWARD L.—	
Water and Its Relation to the Textile Industry	673
TONN, J. F.—	
Prepared Detergents for Textile Finishing	166
TRAVIS, HERBERT S.—	
Dyeing and Finishing Cotton Piece Goods	421
Finishers' Troubles in the Textile Industry—Heating of Calenders	628
TRAVIS, JOHN T.—	
The Singeing of Cotton Fabrics	510
TURNER, E. A. (in collaboration with R. J. McKAY)—	
Monel Metal for Bleaching, Dyeing and Finishing Equipment	54
UNTERWEISER, JOSEPH S.—	
Primuline and Vat Colors for the Production of Fast Khaki Shades	160
VAN RIPER, W. F.—	
The Building of a Dye Industry	367
WARNER, JOHN F.—	
The Chemistry of Cotton Cloth Finishing	281
WARSHAW, FLOYD F.—	
Use of Hydrogen Gas in the Dyeing of Vat Colors	163
WOSNESSENSKY, N. N.—	
The Penetrometer and Its Importance in Determining the Water Resistance of Fabrics	781
WUTH, DR. B.—	
The Influence of Dispersion on Vat Dyeing	291
Indigoid Vat Colors Discharged with Hydrosulphites	695

Index to the Proceedings of the American Association of Textile Chemists and Colorists

January 14, 1924 to December 29, 1924, Inclusive

Subject — Page

Acetate Silk: Bleaching, Dyeing and Finishing of (Little). Paper..... 1
Active Acidity and Alkalinity—What Are They and How Are They Measured? (Chapin). Paper..... 185
Addenda on Vat Colors (Jaeck)..... 42
Analysis of Sizing Materials (Sokolinski). Paper..... 40

ASSOCIATION (Parent Body)—
Third Annual Meeting, Dec. 7 and 8, '23..... 1
Saturday Morning Session:
Bleaching, Dyeing and Finishing of Acetate Silk (Little). Paper 1
Preliminary Report of the Sub-Committee on Light Fastness.... 6
Banquet Photograph 10, 11
Report of the Sub-Committee on Fastness to Perspiration..... 11
Saturday Afternoon Session:
Secretary's Report for Year 1923..... 14
Treasurer's Report 14
Proposed Amendments to the Constitution..... 15
Vat Dyes: Their Properties and Various Phases of Their Application (Hannah). Paper..... 16
Election of Officers..... 25
Dyeing Sulphur Colors on Silk (Rose). Paper..... 25
Discussion of Suggestion that Research Committee Invite Co-operation of Other Associations..... 29
Monel Metal for Dyeing, Bleaching and Finishing Equipment (McKay and Turner). Paper..... 30
Factors Which Affect the Stability of Hydrosulphite Discharge Pastes, with Suggestions for Improvement (Hollander). Paper.... 38
Analysis of Sizing Materials (Sokolinski). Paper..... 40
Program of the Fourth Annual Meeting..... 195
Fourth Annual Meeting (Report)..... 206
Banquet Session, Saturday evening, Dec. 6, '24..... 209

AUTHORS—
Adams, Carleton C.:
Paper: Water Softening and Purification in Cotton Processing (N. Y. Sec., Sept. 26, '24)..... 166
Ainslie, Thomas D.:
Paper: Peroxide Bleaching (R. I. Sec., Nov. 18, '24)..... 220
Benoit, A. W.:
Paper: Dyehouse Design (N. N. E. Sec., May 17, '24)..... 120
Besselievre, E. B.:
Paper: Textile Wastes and Stream Pollution (N. Y. Sec., Oct. 24, '24) 169
Chapin, Dr. H. C.:
Active Acidity and Alkalinity—What Are They and How Are They Measured? (Phil. Sec., Oct. 10, '24)..... 185
Clarkson, Philip S.:
Paper: The Dyestuff Laboratory and the Mill—Past Experience (N. Y. Sec., Nov. 28, '24)..... 197
Culver, John H.:
Paper: The Importance of Soft Water in Wool Processing (N. Y. Sec., Sept. 26, '24)..... 165
Davies, Harry R.:
Paper: The Dyeing of Cellulose Acetate Silk (N. N. E. Sec., Oct. 25, '24) 179
Drum, Harry S.:
Paper: Hosiery Dyeing Machines (Phil. Sec., Dec. 14, '23)..... 48

Subject — Page

Durfee, Winthrop C.:
Paper: The Application of Chromium Compounds in Dyeing (R. I. Sec., Feb. 8, '24)..... 92
Flynn, Oscar R.—
Paper: Testing Colors for Fastness to Light (N. Y. Sec., Jan. 25, '24) 65
Hannah, George K., Jr.:
Paper: Vat Dyes: Their Properties and Various Phases of Their Application (3rd Ann. Mtg., Dec. 8, '23)..... 16
Herrmann, Henry F.:
Paper: The Science of Dyeing (N. Y. Sec., Nov. 28, '24)..... 199
Hibbert, Dr. Harold:
Developments in Cellulose Chemistry and Their Application to the Textile Industry (N. Y. Sec., Feb. 29, '24)..... 85
Hollander, Charles S.:
Paper: Factors Which Affect the Stability of Hydrosulphite Discharge Pastes, with Suggestions for Improvement (3rd Ann. Mtg., Dec. 8, '23)..... 38
Jaeck, J. P.:
Addenda on Vat Colors..... 42
Jefferson, R. C.:
Paper: Kiers: Their Relation to Cotton Finishing (Phil. Sec., Nov. 14, '24)..... 193
Jones, Loyd A.:
Paper: Color Measurement (R. I. Sec., Nov. 23, '23)..... 53
Knup, J.:
Abstract: The Weighting and Dyeing of Silk (Phil. Sec., Oct. 10, '24) 189
Levering, J. Walter:
Abstract: Wool Scouring and Carbonizing (Phil. Sec., Feb. 15, '24) 97
Little, Royal D.:
Paper: Bleaching, Dyeing and Finishing of Acetate Silk (3rd Ann. Mtg., Dec. 8, '23)..... 1
McKay, R. J. (in collaboration with E. A. Turner):
Paper: Monel Metal for Bleaching, Dyeing and Finishing Equipment (3rd Ann. Mtg., Dec. 8, '23)..... 30
Platt, Herbert:
The Dyeing of Celanese (N. Y. Sec., March 28, '24)..... 99
Rose, Robert E.:
Paper: Dyeing Sulphur Colors on Silk (3rd Ann. Mtg., Dec. 8, '23) 25
Sokolinski, J. J.:
Paper: Analysis of Sizing Materials (3rd Ann. Mtg., Dec. 8, '23) 40
Spurgeon, Richard C.:
Paper: Hosiery Dyeing and Its Problems (Phil. Sec., Dec. 14, '23) 45
Steed, Richard E.:
Textile Manufacturer, Retailer and Consumer (R. I. Sec., May 9, '24) 135
Thompson, A. R.:
Paper: Stripping Hosiery with Hydrosulphites and Sulphoxalates (Phil. Sec. April 11, '24)..... —
Tiger, Howard L.:
Water and Its Relation to the Textile Industry (N. Y. Sec., Sept. 26, '24) 145
Tonn, J. F.:
Prepared Detergents for Textile Finishing (R. I. Sec., Jan. 11, '24) 76
Turner, E. A. (in collaboration with R. J. McKay):
Paper: Monel Metal for Dyeing, Bleaching and Finishing Equipment (3rd Ann. Mtg., Dec. 8, '23)..... 30

Subject Page

Unterweiser, Joseph S.:
Paper: Primuline and Vat Colors for the Production of Fast Khaki Shades (N. Y. Sec., Jan. 25, '24) ... 70
Van Riper, W. F.:
Paper: The Building of a Dye Industry (Phil. Sec., April 11, '24) 127
Warshaw, Floyd F.:
Paper: The Use of Hydrogen Gas in the Dyeing of Vat Colors (N. Y. Sec., Jan. 25, '24) ... 73
Wuth, Dr. B.:
Paper: The Influence of Dispersion on Vat Dyeing (N. Y. Sec., April 25, '24) ... 109

Bleaching, Dyeing and Finishing of Acetate Silk (Little). Paper ... 1
Building of a Dye Industry: The (Van Riper). Paper ... 127

Cellulose Acetate Silk: The Dyeing of (Davies). Paper ... 179
Color Measurement (Jones). Paper ... 53
Correspondence ... 107

COUNCIL—
Meeting, Jan. 18, '24 ... 51
Meeting, March 1, '24 ... 81
Meeting, March 28, '24 ... 115
Meeting, May 17, '24 ... 131
Meeting, June 27, '24 ... 139
Meeting, Sept. 26, '24 ... 160
Meeting, Dec. 5, '24 ... 218

Detergents for Textile Finishing (Tonn) ... 76
Dyehouse Design (Benoit). Paper ... 120
Dye Industry: The Building of (Van Riper). Paper ... 127
Dyeing of Cellulose Acetate Silk: The (Davies). Paper ... 179
Dyeing Sulphur Colors on Silk (Rose). Paper ... 25
Dyestuff Laboratory and the Mill—Past Experience: The (Clarkson). Paper ... 197

Factors Which Affect the Stability of Hydrosulphite Discharge Pastes, with Suggestions for Improvement (Hollander). Paper ... 38
Fastness to Light: Testing Colors for (Flynn). Paper ... 65
Finishing: Prepared Detergents for Textile (Tonn) ... 76
Fourth Annual Meeting. [See under "Association."]

Hosiery Dyeing and Its Problems (Spurgeon). Paper ... 45
Hosiery Dyeing Machines (Drum). Paper ... 48
Hosiery with Hydrosulphites and Sulphoxalates: Stripping (Thompson). Paper ... 128
Hydrogen Gas in the Dyeing of Vat Colors: The Use of (Warshaw). Paper ... 73

Importance of Soft Water in Wool Processing: The (Culver) ... 165
Influence of Dispersion on Vat Dyeing: The (Wuth). Paper ... 109

Khaki Shades: Primuline and Vat Colors for the Production of Fast (Unterweiser). Paper ... 70
Kiers: Their Relation to Cotton Finishing (Jefferson). Paper ... 193

LOWELL JUNIOR SECTION—
Meeting, Jan. 18, '24 ... 63
By-Laws ... 83
Meeting, Feb. 29, '24 ... 117

Monel Metal for Dyeing, Bleaching and Finishing Equipment (McKay and Turner). Paper ... 30

NEW YORK SECTION—
Meeting, Jan. 25, '24 ... 63
Testing Colors for Fastness to Light (Flynn). Paper ... 65
Primuline and Vat Colors for the Production of Fast Khaki Shades (Unterweiser). Paper ... 70
The Use of Hydrogen Gas in the Dyeing of Vat Colors (Warshaw) 73
Meeting, Feb. 29, '24 ... 85
Developments in Cellulose Chemistry and Their Application to the Textile Industry (Hibbert). Paper ... 85
Meeting, March 28, '24 ... 98
The Dyeing of Celanese (Platt) ... 98
Meeting, April 25, '24 ... 109
The Influence of Dispersion on Vat Dyeing (Wuth). Paper ... 109
Meeting, May 23, '24 ... 129
Meeting, Sept. 26, '24 ... 145
Water and Its Relation to the Textile Industry (Tiger). Paper ... 145
The Importance of Soft Water in Wool Processing (Culver). Paper 165
Water Softening and Purification in Cotton Processing (Adams). Paper ... 166
Meeting, Oct. 24, '24 ... 169
Textile Wastes and Stream Pollution (Besselievre). Paper ... 169
Meeting, Nov. 28, '24 ... 197
The Dyestuff Laboratory and the Mill—Past Experience (Clarkson). Paper ... 197
The Science of Dyeing (Herrmann). Paper ... 199

NORTHERN NEW ENGLAND SECTION—
Meeting, Feb. 23, '24 ... 82
Meeting, May 17, '24 ... 119
Dyehouse Design (Benoit). Paper ... 120
Outing ... 141
Meeting, Oct. 25, '24 ... 179
The Dyeing of Cellulose Acetate Silk (Davies) ... 179
Active Acidity and Alkalinity (Chapin) ... 185
Meeting, Oct. 25, '24 ... 179
The Dyeing of Cellulose Acetate Silk (Davies). Paper ... 179
Active Acidity and Alkalinity (Chapin) ... 185

PAPERS—
Active Acidity and Alkalinity—What Are They and How Are They Measured? (Chapin) ... 185
Addenda on Vat Colors (Jaeck) ... 42
Analysis of Sizing Materials (Sokolinski) ... 40
Application of Chromium Compounds in Dyeing (Durfee) ... 92
Bleaching, Dyeing and Finishing of Acetate Silk (Little) ... 1
Building of a Dye Industry: The (Van Riper) ... 127
Color Measurement (Jones) ... 53
Developments in Cellulose Chemistry and Their Application to the Textile Industry (Hibbert) ... 85
Dyehouse Design (Benoit) ... 120
Dyeing of Celanese: The (Platt) ... 99
Dyeing Sulphur Colors on Silk (Rose) ... 25
Dyestuff Laboratory and the Mill—Past Experience: The (Clarkson) 197
Factors Which Affect the Stability of Hydrosulphite Discharge Pastes, with Suggestions for Improvement (Hollander) ... 38
Hosiery Dyeing and Its Problems (Spurgeon) ... 45
Hosiery Dyeing Machines (Drum) ... 48
Importance of Soft Water in Wool Processing: The (Culver) ... 165
Influence of Dispersion on Vat Dyeing: The (Wuth) ... 291
Kiers: Their Relation to Cotton Finishing (Jefferson) ... 193
Monel Metal for Dyeing, Bleaching and Finishing Equipment (McKay and Turner) ... 31
Peroxide Bleaching (Ainslie) ... 220
Prepared Detergents for Textile Finishing (Tonn) ... 76
Primuline and Vat Colors for the Production of Fast Khaki Shades (Unterweiser) ... 70
Science of Dyeing: The (Herrmann) ... 199
Stripping Hosiery with Hydrosulphites and Sulphoxalates (Thompson) 128
Textile Wastes and Stream Pollution (Besselievre) ... 169
Testing Colors for Fastness to Light (Flynn) ... 65
Use of Hydrogen Gas in the Dyeing of Vat Colors: The (Warshaw) 73
Vat Dyes: Their Properties and Various Phases of Application (Hannah) ... 16
Water and Its Relation to the Textile Industry (Tiger) ... 145
Water in Wool Processing: The Importance of Soft (Culver) ... 165
Water Softening and Purification in Cotton Processing (Adams) ... 166
Weighting and Dyeing of Silk: The (Knup). Abstract ... 189
Wool Scouring and Carbonizing (Levering) ... 97

PHILADELPHIA SECTION—
Meeting, Dec. 14, '23 ... 45
Hosiery Dyeing and Its Problems (Spurgeon). Paper ... 45
Hosiery Dyeing Machines (Drum). Paper ... 48
By-Laws ... 82
Meeting, Feb. 15, '24 ... 97
Wool Scouring and Carbonizing (Levering). Paper ... 97
Meeting, April 11, '24 ... 126
The Building of a Dye Industry (Van Riper) ... 127
Stripping Hosiery with Hydrosulphites and Sulphoxalates (Thompson). Paper ... 128
Meeting, Oct. 10, '24 ... 188
The Weighting and Dyeing of Silk (Knup). Abstract ... 189
Meeting, Nov. 14, '24 ... 193
Kiers: Their Relation to Cotton Finishing (Jefferson). Paper ... 193

Prepared Detergents for Textile Finishing (Tonn) ... 76
Primuline and Vat Colors for the Production of Fast Khaki Shades (Unterweiser). Paper ... 70

RESEARCH COMMITTEE—
Meeting, March 1, '24 ... 82
Meeting, March 28, '24 ... 115
Meeting, May 17, '24 ... 131
Meeting, June 27, '24 ... 139
Meeting, Sept. 26, '24 ... 161
Meeting, Oct. 17, '24 ... 190
Meeting, Dec. 5, '24 ... 220

RHODE ISLAND SECTION—
Meeting, Nov. 23, '23 ... 44
Color Measurement (Jones). Paper ... 53
Meeting, Jan. 11, '24 ... 75
Prepared Detergents for Textile Finishing (Tonn) ... 76
Meeting, Feb. 8, '24 ... 92
The Application of Chromium Compounds in Dyeing (Durfee). Paper ... 92
May Meeting (Notice) ... 107
Meeting, March 14, '24 ... 129
Meeting, April 11, '24 ... 129
Meeting, May 9, '24 ... 139
Textile Manufacturer, Retailer and Consumer (Steed) ... 135
Meeting, Oct. 31, '24 ... 195
Meeting, Nov. 18, '24 ... 220
Peroxide Bleaching (Ainslie). Paper ... 220

Science of Dyeing (Herrmann). Paper ... 199
Silk: Dyeing Sulphur Colors on (Rose). Paper ... 25

SOUTHERN SECTION—
Inaugural Meeting ... 206

Standards for the Testing of Dyes and Dyed Fabrics ... 115
Stripping Hosiery with Hydrosulphites and Sulphoxalates (Thompson). Paper ... 128

SUB-COMMITTEE ON SILK—
Meeting, Sept. 16, '24 ... 161
Supplementary Report—Fastness Tests for Dyed Silk ... 162

Testing Colors for Fastness to Light (Tonn) ... 65
Testing of Dyes and Dyed Fabrics: Standards for the ... 115
Textile Manufacturer, Retailer and Consumer (Steed) ... 135
Textile Wastes and Stream Pollution (Besselievre). Paper ... 169

Use of Hydrogen Gas in the Dyeing of Vat Colors (Warshaw). Paper 73

Vat Colors for the Production of Fast Khaki Shades: Primuline and (Unterweiser). Paper ... 70
Vat Colors: The Use of Hydrogen Gas in the Dyeing of (Warshaw). Paper ... 73
Vat Dyeing: The Influence of Dispersion on (Wuth). Paper ... 109
Vat Dyes: Their Properties and Various Phases of Their Application (Hannah). Paper ... 16

Water and Its Relation to the Textile Industry (Tiger). Paper ... 145
Water in Wool Processing: The Importance of Soft (Culver). Paper .. 165
Water Softening and Purification in Cotton Processing (Adams). Paper 166
Wool Scouring and Carbonizing (Levering). Paper ... 97

NOW READY

COLOUR INDEX

in the English Language

Edited by

F. M. ROWE, D.Sc., F.I.C.

assisted by
C. LEA, M. Sc. Tech.
and
A Large Revision Committee of Experts

Size **12½"** x **9½"** **371** Folios (**742** Pages)

Bound in Full Leather $28.00 **Bound in Full Cloth** $25.00

COLOUR USERS will find the "Alphabetical List" which sets out the various Makers of each Colour of the greatest use and assistance to them.

CONTENTS

SECTION A—Synthetic Organic Dyestuffs (291 folios).
SECTION B—Natural Organic Dyestuffs (10 folios).
SECTION C—Natural and Artificial Inorganic Colouring Matters (Mineral Pigments) (16 folios).
SECTION D—General Indices, Commercial Names, Patent Numbers, Intermediate Products, etc. (54 folios).

Commercial Names
Scientific Names
Components
Formula
Preparation
Discovery
Mode of Application
Literature
Description
Properties

of

Over 1300 Dyes

given, also a special column for purchaser's notes.

PUBLISHED AND ISSUED BY

The Society of Dyers and Colourists

PEARL ASSURANCE BUILDINGS, BRADFORD, YORKS., ENGLAND

For further particulars required apply THE SECRETARY

KLIPSTEIN CHEMICAL *Specialties*

for

TEXTILE PROCESSING

HEREIN is a partial showing of a most extensive group of specialty Compounds and Preparations covering practically every Textile Chemical operation.

These products are the direct outcome of our exhaustive laboratory experimentation, coupled with practical experience in those problems existing throughout the textile industry.

We offer also a most extensive line of

Dyestuffs and Colors

Textile Oils—Gums and Waxes

A. KLIPSTEIN & CO.

644-52 Greenwich St.

NEW YORK CITY

Branches:

BOSTON PHILADELPHIA CHICAGO

PROVIDENCE, R. I. CHARLOTTE, N. C.

Represented in Canada by

A. KLIPSTEIN & CO., LTD., 12 ST. PETER ST.

MONTREAL

Chrome Acetate

THIS compound is a mordant adapted for calico printing and also is extensively used for dyeing of Mineral Khaki on cotton.

Nainsook Softener

THIS preparation is especially adapted for pure finishes of the Nainsook checks for summer wear, and any such kindred finishes, where a soft, silky feel is required.

Aquasol

A PRODUCT especially useful in dyehouses where level dyeing and penetration of the dyestuff and lustre are desired.

Softener T

A COMPOUND perfectly adapted for cotton warp sizing. The thorough penetration obtained with this size on the warps reduces to a minimum the flaking or dusting off.

Kier Soap RZD

A COMPOUND used chiefly as an assistant in Kier boiling for quick wetting out of various vegetable fibres, also an assistant in bleaching and in mercerizing.

Softener 8 A

A COMPOUND particularly well adapted for the finishing of Ginghams and similar fabrics.